III. ACTIVE COMMERCIAL – INDUSTRIAL PROGRAMS

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

There were several noteworthy developments during the past year for commercial and industrial customers. In 2002, City Light completed the transition from offering two separate conservation programs to one umbrella entity—Energy Smart Services *(ESS)*. The new program motto is "solutions and incentives for business." The Energy Smart Services program continues to offer a comprehensive and flexible set of efficiency services to medium and large commercial, industrial, institutional and governmental customers.

As a consequence of consolidating services through the *ESS* program, the Commercial–Industrial (C–I) section of the Energy Management Services division was reorganized to better plan and deliver conservation services. Commercial–Industrial staff were formed into two Commercial Teams, one New Construction Team, a Public Sector Team, an Industrial Team, a New Technology and Plug Load Team, and a Service Delivery Support Team. A comprehensive *ESS Program Manual* was published in 2002 to describe each *ESS* service, including financial incentives, simple rebates, standard and custom incentives, technical services and operations and maintenance services.

Beginning with this issue of the ENERGY CONSERVATION ACCOMPLISHMENTS report covering 2002 program activity, services contracted to medium and large commercial and industrial customers are included under the *ESS* program. Projects contracted under this new combined program will be tracked to completion and reported within the new *ESS* program. The Energy Savings Plan (*E$P)* was discontinued in 2002 with completion of the final project, while the remaining eleven projects originally contracted under Energy Smart Design (*ESD*) will continue to be reported under that program until all have reached completion.

The primary focus of Commercial–Industrial activity in 2002 was on completion of conservation projects that are eligible for power purchase offsets under the BPA Conservation Augmentation agreement. In 2002, City Light acquired 3.8 average megawatts (aMW) from contracted and non-incentive energy saving projects with small, medium and large commercial, industrial, institutional, and governmental customers. In so doing, the Utility acquired 42% of the utility energy savings goal of (9.0 aMW) and 52% of the Commercial–Industrial goal (7.3 aMW). New contract activity in 2002 lagged from previous years, due to the weak local economy and City Light decisions to keep several field staff positions vacant in response to the utility's financial situation. Budget authority for new projects was also constrained in 2002 by the carry over from 2001 of $2.1 million (about 13,590 MWh) in contracts that resulted from the highly successful '10+10' Incentive Bonus initiative.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

Figure 13

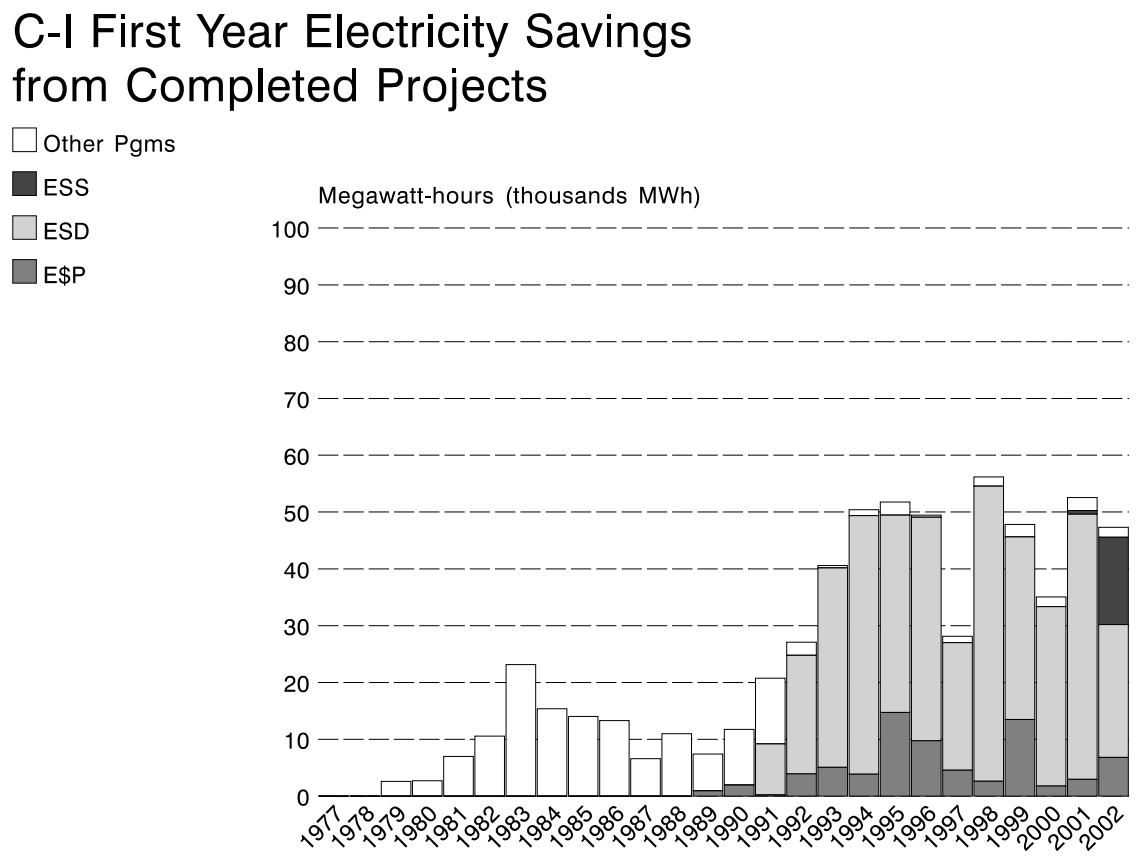

Figure 12 shows first year energy savings from projects completed in C–I programs from 1979 through 2002. Beginning in 1989, shaded areas represent the variety of services to medium and large businesses delivered through the Energy $avings Plan (now discontinued) and Energy Smart Design program (phasing out), as well as Energy Smart Services (in its first full year of operation under that umbrella identity). From the perspective of customers, this sequence of program evolution in service offerings has appeared relatively seamless. All told, these three programs are responsible for delivering 2,869,607 MWh of energy savings to date, and reducing the utility system load by 57.8 aMW in 2002. Meanwhile, other C–I programs have delivered 2,000,755 MWh of energy saving to date, and reduced the system load by 9.9 aMW in 2002. Annual acquisition levels rose in 1993-1996 with the ramp-up and down of BPA funding. City Light rallied in 1998-1999 with utility funds, retrenched in 2000, and rallied in again 2001 with the highly successful '10+10' Incentive Bonus for medium and large customers.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

Commercial–Industrial energy savings came from:

- Installing more efficient lighting in small businesses;
- Helping medium and large businesses manage operating costs;
- Promoting and financially assisting existing medium and large businesses to make capital investments in a wide variety of end uses and equipment;
- Providing technical advice and efficiency funds for existing buildings;
- Increasing the energy efficiency of new commercial buildings in the design and construction stages;
- Funding commissioning plans for newly constructed buildings;
- Assisting government and institutional customers with multiple, complex sites to acquire energy savings;
- Improving process efficiencies for industrial customers through energy studies and equipment installation;
- Helping businesses participate in Climate Wise partnerships for greenhouse gas reduction; and,
- Promoting leadership on sustainable building practices.

Small Business: The $mart Business Program rebates private-contractor lighting retrofits for small commercial customers. City Light offers both the citywide program and a localized component targeted in the current year Neighborhood Power Project (*NPP*) area. First tested in 1995, the $mart Business Project canvassed small businesses in one neighborhood and directly installed lighting measures. The pilot version of the program was launched in the Fremont (near north central) neighborhood of Seattle under the multi-sector marketing umbrella of the Fremont Neighborhood Power Project. Another small commercial service concept tested in 1997-1998, the Small Commercial Rebate Pilot Project started up to provide efficient lighting for small businesses throughout the City of Seattle, not just neighborhoods selected for targeting by $mart Business. In 1999 this project merged with $mart Business to form the consolidated $mart Business Program.

$mart Business neighborhood services were implemented in the Georgetown / Maple Hill, Beacon Hill, and Sodo (south central) areas of Seattle during 1996-1997; Lake City (northeast Seattle) in 1998; Rainier Beach / Southeast Seattle in 1999; and West Seattle / Delridge / White Center (southwest Seattle) in 2000. City Light also tested targeting additional business-only neighborhoods not likely to be served through the comprehensive *NPP* program; the first areas for this service were Belltown / Denny Regrade (in the northern downtown area) and adjacent lower Queen Anne Hill. In 2001 the target focus moved to the Central Area east of downtown, and in 2002 the program served the Greenwood / Phinney Ridge neighborhood in northwest Seattle. During 2002 incentives were provided for efficient lighting retrofits to 179 small

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

businesses with estimated energy savings of about 0.20 aMW. Of these businesses, 106 were served through the citywide program and the other 73 through the program's *NPP* component.

Plug Load Services: Plug Load services assist customers by dispensing information to promote the efficient use of office equipment through purchasing and management strategies, control devices, and behavioral changes. One example of these Plug Load services began in 2001 when City Light and the Bonneville Power Administration (BPA) offered incentives to purchase and install VendingMiser™ devices on soft drink vending machines. In 2001-2002 the *ESS* program offered free installation of these control devices for all qualifying cold drink machines through a contracted installer, with plans to install up to 5,000 units over several years. During 2001 and 2002, City Light secured funding through the BPA to support the VendingMiser service to install a total of 2,754 the devices; BPA funding for this service ceased in February 2003. Since then, City Light has provided participating customers with an $80 rebate toward the cost of each VendingMiser installed.

Facility Assessment: From its inception in late 1997 through 1999, the Facility Assessment (FA) service was known as the Operations Resource Assessment Service (ORA). Renamed in 2000, the FA service provides a free, multi-resource audit of business facilities to help customers manage their operating costs by identifying specific actions that can reduce electrical, water, and natural gas usage. During 2002 the FA service continued successfully providing commercial and industrial customers with customer-focused audits and action plans. To offset impacts from the budget decision to end consultant assistance for delivery of FA audits, utility field staff picked up much of the slack. By year end they completed 22 FA audits, exceeding the annual goal of 15.

The FA service has been accepted as an effective tool for improved relations with our customers and for identifying their energy service needs. Approximately 81 million kWh of electrical energy potential was identified in 194 completed FA audits from late 1997 through 2002, averaging 396,905 kWh of potential savings per audited site. An important goal for the FA service is to provide a 'gateway' for customers to identify their need for resource efficiency services and to assist in accessing them. Toward that end, most FAs provide referrals to one or more other efficiency services. Of the 194 FAs completed from 1998 through 2002, 76% of FA participants were referred to the financial incentives available for conservation measures installed through the *ESD* or *E$P* programs. Participants were also referred to a variety of City services, including the Water Smart Technology Program offered by Seattle Public Utilities, City Light non-incentive services, power factor and power quality correction services, and to the appropriate City Light staff to resolve billing or rate questions. (For more information about Facility Assessments, see the *Energy $avings Plan* and *Energy Smart Design* entries in SECTION III: ACTIVE COMMERCIAL–INDUSTRIAL PROGRAMS.)

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

A comprehensive evaluation of the FA service was completed in 2000, involving 96 projects receiving audits and action plans from January 1998 through June 1999. Telephone interviews with 73 participants revealed that they were quite satisfied with the service and had taken conservation actions on their own to reduce energy consumption and operating costs. In addition, 17 participants received incentives for one or more FA-recommended energy savings measures from the Energy Smart Design or Energy $avings Plans program. Between actions financed solely by the participating customer and those funded by City Light, savings totaled 9,379 MWh. The FA service was quite successful from the viewpoint of cost-effectiveness. For the electrical resource actions alone, the cost was 3.1 cents (levelized, or 31 mills) per kilowatt-hour to the service area and 1.9 cents (or 19 mills) for City Light. Cost-effectiveness improved when non-electrical (water and natural gas) measures were added, resulting in benefit-cost ratios of 1.7 for the service area and 2.6 for City Light.

Commercial Buildings: The Energy Smart Services (*ESS*) program provides free technical advice to commercial and institutional customers on ways to reduce electric energy use in their facilities. Qualifying customers can receive funding for analysis of electrical savings projects, and for installing energy efficient equipment in their facilities.

During 2002, *ESS* and *ESD* contracted 196 projects in commercial facilities with incentive costs totaling $4.3 million. Through these contracts, the program acquired 22,230 MWh in first year energy savings. The 184 *ESS* and *ESD* commercial projects completed in 2002 resulted in 33,406 MWh of savings at a utility cost of 2.1 cents per kWh (for incentives plus program administration). These savings and costs exclude Facility Assessment and Plug Load projects, as well as *E$P* and *ESS* incentive projects in industrial facilities.

The wholesale cost of energy to City Light and other west coast utilities began to increase in mid-2000, peaking late in the year and through mid-2001. The consequent series of utility rate increases have underscored the importance and value of conservation for City Light and our customers. Financial impacts were dramatic, increasing 2001 C–I conservation budgets and staffing authorization as well as program goals for contract authorizations. However, during 2002 Commercial–Industrial conservation budgets were reduced from their relatively high 2001 level. Actual total administrative and incentive expenditures for completed *ESS* and *ESD* projects decreased by 29% between 2001 and 2002. The economic downturn affecting the Puget Sound area also contributed to the reluctance of customers to move forward with capital investments in 2002. Also, some field positions were left vacant in 2002 to reduce conservation budget impacts.

During the 1980s and 1990s the commercial construction boom in Seattle provided a unique energy conservation opportunity and C–I conservation staff engaged in exceptional efforts to increase the energy efficiency of the larger downtown buildings, either in the design or

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

construction phases. However, the national and regional economic slowdown experienced since mid-2001 through 2002 has reduced the number of new large building construction projects in Seattle. Nonetheless, serving the energy efficiency needs of new commercial buildings remains a high priority. The key objective is to make new buildings as efficient as possible when they are built, rather than face more costly or impractical retrofits a few years later. City Light seeks to capture potential 'lost opportunities' from the outset.

Several major on-going public and private commercial new construction projects began in 2002 or were continued from 2001. Private sector incentive and commissioning projects include the 5th and Bell Building, the IDX Tower, the Immunex research and technology center at Pier 88, and the Opus Center–Union Station Building. Active public projects continuing in 2002 include the new Seattle Public Library, the Seattle Justice Center and new City Hall, the Marion Oliver McCaw Performance Hall (redeveloping the old Opera House at Seattle Center), the Washington State Convention Center addition, the Washington State Football and Soccer Stadium, and the on-going Key Tower remodel.

The Public Library, the Seattle Justice Center and Civic Center, the McCaw Performance Hall, and the Key Tower renovation are also involved in the Leadership in Energy and Environmental Design (LEED™) program designed to meet the LEED Silver Certificate efficiency rating. The LEED Silver Certificate requires specified levels of energy, water, and waste water efficiency, building commissioning, air quality, and daylighting and design excellence. Commercial/ Industrial section staff have been actively involved in the design of these buildings and all of these projects will eventually receive City Light financial incentives for many of the installed energy conservation measures.

Major new construction projects completed and receiving final *ESD* or ESS incentive payments during 2002 included the Washington State Football and Soccer Stadium, Benaroya Research Institute at Virginia Mason Hospital, Uwajimaya Village, and the Opus Center–South Building.

Tailored Agreements: Between 1994 and 1996, seven Tailored Agreements were signed, involving four major public-sector agencies with multiple, complex sites. Tailored Agreement projects are large, multi-year contracts involving facilities at the University of Washington, Seattle Public School District, King County, and City of Seattle. Substantial energy savings have been achieved to date by Tailored Agreement projects. The savings estimated for the combined contacts total 80,780 MWh, resulting in a potential utility load reduction of 9.7 aMW. During 1999-2002 contracts were completed with the University of Washington, Seattle Public Schools, King County, and City of Seattle municipal facilities: the result was 58,480 MWh in annual savings, or 72% of the estimated potential energy savings at those sites, and a 6.7 aMW load reduction. For more about tailored agreements completed prior to 2002, see notes to the *Energy Smart Design Program*, in SECTION III: ACTIVE COMMERCIAL–INDUSTRIAL PROGRAMS.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

University of Washington. In May 1999, City Light and the University of Washington celebrated the ceremonial completion of a major Tailored Agreement spanning five years (the final incentive payment as made in March 2000). In 2002 the final Tailored Agreement was completed at the University of Washington, realizing 34,326 MWh in annual savings, or 3.9 aMW of load reduction, produced from $4.8 million dollars in City Light incentive payments. This very successful partnership resulted from management support and teamwork in both organizations. A second Tailored Agreement, focused primarily on HVAC efficiency, will continue into 2002. Building on this strong foundation, City Light is looking forward to a long-term partnership with the University of Washington on energy management and sustainability.

Seattle Public Schools. From 1996 through 2000, a total of 16,301 MWh of energy savings have been realized from measures installed as part of Tailored Agreements in Seattle Public Schools, resulting in 1.86 aMW of load reduction. The Seattle Public Schools Tailored Agreement was completed in 2000.

King County Efficiency Projects. From 1998 through 2001, a total 4,150 MWh of energy savings have been developed from measures installed in King County facilities, resulting in 0.47 aMW of load reduction. Nearly $616,000 in incentive payments have been made for several large lighting and HVAC projects. The King County Tailored Agreement was completed in 2001.

Seattle Municipal Facilities. Between 1995 and 1998 a total of 3,703 MWh of energy savings were attained through the Tailored Agreement in City of Seattle owned buildings, at a cost of $794,828.

Industrial Efficiency Projects: From 1988 through 2001 the Energy $avings Plan (*E$P*) program provided industrial customers with assistance to improve process efficiency and achieve savings on their bills. The program provided funding for energy studies and for installation of qualifying energy management projects. Efficiency projects at industrial facilities were also funded through the Energy Smart Design (*ESD*) program, as well as *E$P*. Typically, the *ESD* projects involve non-process related measures such as lighting and HVAC equipment replacement. In 2002 all new contracted industrial incentive projects are delivered through the Energy Smart Services (*ESS)* program. Energy savings and expenditures for *E$P* projects contracted prior to 2002 will continue to be reported in the *E$P* program entry until each project is completed.

Apart from motor-replacement rebates, the number of projects contracted through *E$P* increased each year from 1988, peaking at 21 in 1995; since then the number dropped to as few as two per year (in 1998 and 2000). This change reflected a significant increase in the number of industrial

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

projects handled by the *ESD* program. During 2002 a total of 23 industrial incentive contracts were executed under the *ESS* program; of these 11 were completed in 2002. In addition, eight industrial incentive projects contracted under the *E$P* program prior to 2002 were completed. Together, the 19 *E$P* and *ESS* industrial incentive projects completed in 2002 produced 1.1 aMW in load reduction at a cost of 1.3 cents/kWh to City Light (2.5 cents/kWh to the service area, including customer costs).

Five case studies were completed on *E$P* projects during 1997-1999. The purpose of these impact evaluations was to measure for the first time the full value of industrial projects. The case studies measured value to the participating customers and to Seattle City Light (these values combined reflect the service area benefit). Measures included energy and demand savings indexed to changes in production, non-energy benefits, and cost-effectiveness from several perspectives. A routine verification process conducted before the evaluations set the levelized cost across all five projects as 2.1 cents/kWh. However, the case study evaluation found that the actual cost was slightly less than half the pre-evaluation estimate. The additional metered and production-indexed savings measured in the case studies, along with demand savings and the economic value of non-energy impacts, lowered the average service area cost to only 1.0 cents/kWh.

Including savings from facility assessments, total *E$P* energy savings during 2002 from completed projects were 6,824 MWh. Seven industrial process efficiency projects were completed at Longview Fibre Company (two projects), PSF Industries, Birmingham Steel Corp. (two projects), James Hardie Gypsum, and Ball-Foster, Inc. In addition, one *E$P* non-process project was completed at the Fourth and Blanchard Building.

In addition, the Energy Smart Design program has seen several years of success working with industrial customers. From industrial projects completed in 2002, *ESD* realized 6,127 MWh of annual energy savings. During the period 1990-2002, *ESD* projects completed in industrial facilities produced 50,249 MWh, accounting for 13% of total *ESD* savings. Large industrial projects (with over 500 MWh annual savings) completed through the *ESD* program during 2002 include Boeing, Northwestern Industries, Burlington Northern, Vitamilk Dairy, LaFarge Cement, and Jorgensen Forge.

Municipal Conservation: City of Seattle departments have experienced a number of challenges in pursuing energy efficiency projects, due to exhaustion of the Municipal Conservation Fund administered by the Office of Sustainability and Environment (OSE), to higher utility rates following the 2001 West Coast energy crisis, and to cutbacks in budget and staffing due to reduced General Fund revenues. Because of these factors, the Energy and Environmental Policy committee of the Seattle City Council asked City Light conservation staff to pursue avenues to

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

provide additional support for hard-hit City departments in order to reduce bills and improve operations. In response to this request, City Light undertook four activities in 2002.

The Commercial–Industrial section created a four-person Public Sector Team to focus on conservation assistance to governmental organizations. The targeted customers for this team include the City of Seattle, suburban cities, King County, State of Washington, the federal government, and public schools.

City Light proactively contacted public sector facility management staff (especially within the City of Seattle) to provide briefings on conservation services, including free facility assessments, technical assistance, and financial incentives for retrofit projects and new construction.

City Light continued to actively promote energy efficiency in public buildings in the design and construction stages; providing financial assistance for energy analysis of promising conservation measures: and, participating in the City's Green Building Team.

And, based on recommendation from OSE staff, City Light targeted the Parks Department as the best 'untapped' conservation potential among City departments. The utility contracted to upgrade lighting at the Seattle Tennis Center, as a 'toe in the door' for additional conservation partnerships. City Light worked closely with Parks Department staff to identify and prioritize additional conservation projects for 2003 and beyond.

Lighting Design Lab: The Lighting Design Lab continues to provide lighting technical services for commercial and industrial companies across the region. In 2002 a significant accomplishment was expanding the Internet web-site use from 8,000 hits a month in 1999 to an average of 21,650 hits each month during 2002. The web-site address is lightingdesignlab.com. During 2002 the Lab had nearly 2,800 on-site visitors representing customers and trade allies. This total includes attendees of on-site training classes, meetings, Lab tours, Lab library users, and lighting product representatives.

The Lighting Design Lab also continued to implement the fifth year of the NW Energy Efficiency Alliance (NEEA) contract providing expanded services to the region. During 2002, the Lab Project Manager met periodically with members of the Lab Technical Advisory Committees (TAC), composed of representatives from Spokane, Boise, Missoula, and Portland. During the year the Lab conducted off-site lighting training classes throughout Washington, Oregon, Idaho and western Montana, which drew an additional 1,993 attendees.

And although the Lighting Design Lab is a regional resource, Seattle City Light customers take advantage of the assorted technical assistance services available to them. Almost 54% of all the visitors coming to the facility represent Seattle ratepayers. Among City Light commercial

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

consultations in 2002 were Airborne Express, Benaroya Hall, Fred Hutchinson Cancer Research Center, Group Health Cooperative (IT Center), PCC Natural Markets, and Regence BlueShield.

Greenhouse Gas Reduction: A Seattle City Council resolution adopted in 2000 requires that City Light meet all future electric load growth with no net increase in greenhouse gas emissions. Seattle was the first U.S. city to establish such a zero net greenhouse gas goal. This directive provided the framework for ongoing City Light climate protection activities including a power purchase agreement in 2001 for 100 MW from the Stateline Wind Project and continued conservation acquisition. The two-prong path of renewables and conservation are how City Light and its customers can make a meaningful contribution to reducing greenhouse gases while benefiting the local economy.

Since 1997, City Light has partnered with commercial and industrial customers to reduce greenhouse gas emissions. In June of that year, the City of Seattle was awarded a local government grant by the International Council for Local Environmental Initiatives (ICLEI) to administer the Environmental Protection Agency (EPA) Climate Wise program. The ICLEI mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global environmental and sustainable development conditions, through cumulative local actions.

The grant was renewed each year through 2001, when the EPA terminated the program in favor of its Energy Star™ partnership program and a new Climate Leaders program under development at the national level. However, City Light's Energy Management Services (EMS) division continues to support greenhouse gas reduction assistance for interested customers. In 2002, Climate Wise activities were marketed as a component of Energy Smart Services for the commercial–industrial sector.

Climate Wise encourages industries and governmental agencies to work together proactively for the global environment and local economy. City Light offers a comprehensive approach to conservation and climate protection services and is a recognized leader in a national and regional effort supporting voluntary partnerships to reduce greenhouse gas impacts. Climate Wise helps demonstrate the value of non-regulatory approaches to solving growing cross-border environmental concerns at the local level. Program goals include:

- To raise awareness and facilitate cooperation on climate change issues, communicating commitments made by the City of Seattle and Climate Wise partners;
- To promote the economic and environmental benefits, i.e. 'business case' for taking advantage of energy and resource efficiency opportunities that reduce emissions; and,
- To provide customized technical assistance to companies and institutions signing voluntary partnership agreements with City Light.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

Businesses are recognized for actions they take to improve energy efficiency, reduce waste, support renewable energy, and minimize atmospheric emissions. Over forty business participants include industry, large commercial facilities, retailers, local institutions, and small companies.

EMS staff worked with the City Office of Sustainability, King County, and other City Light staff to plan and conduct the 2002 Seattle ICLEI Conference held in February 2002. A trade-show type booth highlighting City Light conservation and environmental efforts, including Energy Management Services, the new Green Power Program, the City Light 'zero net emissions' policy, the recent wind power purchase, and mitigation of greenhouse gases. Media coverage included interviews with City Councilmember Heidi Wills on KUOW, as well as stories on KING 5 television and the SEATTLE POST INTELLIGENCER. The focus of the Seattle ICLEI conference was the challenge of global warming and the various local, national, and international efforts, being employed to reduce green house gas emissions. The conference included scientists and other experts to bolster the participants understanding of and appreciation for the challenges of global warming. Councilmember Wills made a presentation on the City's low-income weatherization efforts and gave special recognition to the accomplishments of the EMS division, not only in this regard but also to City Light's broad conservation efforts.

New greenhouse gas emission accounting tools are becoming more widely available to businesses worldwide. In 2002, City Light adopted the World Business Council for Sustainable Development—World Resources Institute's *Greenhouse Gas Protocol* for reporting its own emissions. The EPA Climate Leaders program and California's Climate Action Registry use this same protocol. The Energy Management Services division plans to promote the benefits of this protocol to its business customers based on City Light experience, through the Environment and Safety division.

Voluntary Green Power Program: City Ordinance 120623 and Resolution 30420 established the Seattle Green Power Program. In fulfillment of this program, EMSD plans and develops solar photovoltaic (PV) demonstration projects at Seattle Public Schools and other public facilities to promote increased customer understanding and transformation of the local market for green power. In 2002 the EMS division began offering Seattle Green Power, a voluntary customer contribution program to fund the development of new renewable energy sources with an emphasis on local solar PV demonstration projects. This program supports City Light goals for greenhouse gas reductions by promoting awareness and transformation of local energy markets to clean, emission-free sources. Seattle Green Power contributions augment City Light's rate-based Stateline wind power purchase. In 2002 nearly 3,500 (1%) of City Light customers signed up for Seattle Green Power, including 35 businesses (among them all the Kinko's served by the utility). Solar PV installations were completed in Seattle at Greenwood

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

Elementary School and Orca at Columbia Elementary School, with many more in the planning stages. Solar PV projects currently in the pipeline include: Washington Middle School, Carkeek Park Environmental Education Center, Woodland Park Zoo, Bradner Gardens Park Community Utility Building, and Ballard High School.

Sustainable Building: The Pacific Northwest prides itself as being a leader in energy and environmental issues. The region has a small but growing number of individual successes in the area of sustainable building. The concept of sustainable building is defined as designing, constructing, and operating buildings and landscapes to optimize economic, environmental and social performance. To do this all phases of a building's life cycle needs to incorporate energy efficiency, water conservation, healthy building materials and finishes, superior indoor environmental quality, and sustainable siting and transportation.

Encouraging sustainable building in private sector development continues to be a goal of the Seattle City government. EMSD has assumed a major role in promoting these activities over the last few years through sponsorship of the Northwest Regional Sustainable Building Action Plan in 1997, completion of the Sustainable Demand Project grant in 2000 and early 2001, development and sponsorship of the Sustainable Building Professional Certificate Program, and continuing participation in the City's Green Building Team. (For more information about Sustainable Building, see the *Sustainable Design and Energy Code Programs* entry in SECTION III: ACTIVE COMMERCIAL–INDUSTRIAL PROGRAMS.)

Sustainable Demand Project, 2000 Grant. Work began in late 1999 and continued throughout 2000 on the Sustainable Demand Project. In-depth research of all available case studies around the country demonstrated that sustainable building techniques that provide high quality lighting and daylighting, as well as superior indoor air quality, result in benefits such as increased worker productivity, reduced absenteeism, increased retail sales, and dramatic school test score improvements. At the same time energy consumption and operational costs are reduced. Most dramatically, the financial value of the first three benefits greatly exceeded the financial value of energy and operational savings.

In order to determine whether this information would compel them to incorporate sustainable building techniques into building projects, these benefits were presented to 85 development decision makers-developers, building owners, architects and their consultants, tenants and facility managers. The simple answer was 'no'—simply providing decision-makers with information is insufficient to motivate them to design and construct buildings differently. Standing in the way is many barriers, led by a strong first-cost fixation. Further, the traditional linear decision-making process inherent in the development industry, and established professional relationships that depend on predictable performance, preclude innovation in the building market.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

High Performance Building Team. Out of these grant interviews and research of current literature came awareness of the need to integrate the decision-making process. It should involve building end users-tenants and facility managers-in early decision charettes to incorporate sustainable building goals for the project. Modeled on the City's Green Building Team, the High Performance Building Team (comprised of many of the same City staff) conducted pilot charettes during 2000 with three private sector projects. This was an experiment in early intervention to incorporate sustainable building techniques and to pursue Leadership in Energy and Environmental Design (LEED™) certifications.

One of the lessons learned with the High Performance Building Team was intervention with a team of City staff could be somewhat intimidating and did not necessarily create the intended atmosphere of collaboration. Further, some of the costs associated with LEED certification, particularly the costs of registering and documenting a project and the costs of energy modeling, still stood as significant barriers. In 2001, City Light and Seattle Public Utilities co-sponsored a new *LEED Incentive Program* to overcome those problems.

LEED and Built Green Incentive Programs. Early LEED incentive applicants were multi-family residential projects for which LEED 2.0 is not a well-suited benchmarking tool. Seattle City Light and Seattle Public Utilities introduced a *Built Green Incentive Program* in July 2002, based on use of the Multi-Family Built Green™ checklist developed by the Master Builders Association (MBA) of King and Snohomish Counties for their member builders. Unlike LEED, which has extensive documentation requirements, Built Green is self-certifying. Funding for Built Green Incentive projects is provided on a multifamily-unit basis to help defray the associated costs of membership, dues and application fees associated with participating in the Built Green program. Threshold levels for the Incentive program are somewhat higher than the third and highest level defined by the MBA Built Green program. Top levels of funding reach maximums of $15,000 and $20,000 for projects that achieve performance levels comparable to achieving LEED Certified and Silver for commercial buildings.

Now in their third year of funding, seven projects have been awarded LEED incentive funding (one at LEED Silver) and one project has received Built Green funding. These seven projects are Ravenna Woods, Traugott Terrace, Nordheim Court, High Point (City of Seattle), Alcyone, Croft Place, and Georgetown HQ. Eight projects have submitted pre-applications for LEED Incentive funds (five awarded in 2002), and two were submitted for Built Green (one awarded). Negotiations continue with a number of projects in each category. Typical for most projects, a threshold level of comfort must be achieved before there is confidence in submitting both a pre-application and application for financial participation.

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

LEED Renewable Energy Credit. The United States Green Building Council approved a credit interpretation submitted by EMSD that would allow City Light customers (and in particular LEED projects) to purchase 50% of their electrical energy needs from renewable sources.

Response to City Council Resolution 30280. This resolution adopted in February 2001, requests that a plan be developed to accelerate green building activities within City of Seattle-owned and private sector buildings. One item in the resolution was the requirement that the Seattle Energy Code exceed the American Society of Heating, Refrigeration and Air Conditioning Engineers energy efficiency standards by 20% (ASHRAE 90.1, 1999). City Light representatives participated in 26 meetings that DCLU conducted with private sector professionals to discuss the implementation of that policy. An amended Seattle Energy Code was adopted in late 2001 and took effect March 1, 2002. The City green building team, with active participation of City Light staff, will address sustainable building activities in all Seattle building market segments.

By 2002 a total of sixteen facilities owned by the City of Seattle have achieved LEED Silver certification, six of these buildings were completed in 2002 or will be in 2003; the Seattle Justice Center, Seattle City Hall, Carkeek Park Learning Center, Southwest Police Precinct, Fisher Festival Pavilion, and the McCaw Performance Hall. The remaining public sector LEED buildings will be completed and occupied between late 2003 and 2006. These include the North Cascades Leaning Center, High Point Community Center, Central Public Library, Park 90/5 Building C, Cedar River Treatment Facility, Yesler Community Center, Combined Police and Fire Department Training Center, and two large LEED remodeling projects, the Arctic Building and Key Tower. Together these LEED projects total approximately 2.8 million square feet.

In 2002 an interdepartmental committee was formed to plan and conduct an evaluation of selected City of Seattle-owned LEED buildings. The evaluation will include a broad array of the environmental indicators (energy and water savings and air quality), social benefits (occupant comfort, satisfaction and health), and economic indicators. The economic portion of the evaluation will include a cost-effectiveness analysis of the life-cycle costs and benefits derived from the LEED measures incorporated in these buildings. Due to budget limitations, only three of the most recently completed LEED buildings will be included in the first phase of the LEED evaluation: City Hall, Justice Center, and Key Tower remodel. Preliminary results will be available in 2004. Additional City-owned LEED buildings may be included in the evaluation at a later date if resources are available.

Certified Sustainable Building Advisor Certificate Program. Developed in 1999 by City Light, along with Seattle Central Community College, this program educates industry professionals on sustainable building strategies. The fifth course series will begin in October 2003, to be expanded from six months to nine months in length. Over the four years this course has been offered, more than 120 industry professionals have received a comprehensive grounding in

2002 COMMERCIAL–INDUSTRIAL HIGHLIGHTS

sustainable building theory, methodologies, strategies and hands-on experience. Portland General Electric's Earth Advantage Program will shortly sign an agreement to license the program for use in most of Western Oregon.

Support of Sustainable Neighborhoods. EMSD has taken the lead in Citywide collaborative efforts to encourage sustainably developed neighborhoods in the South Lake Union and High Point neighborhoods. Beyond supporting neighborhood sustainability goals, each neighborhood is being encouraged to use benchmarking tools—LEED™ and Built Green™—as measures of performance.

In March of 2002 the EMS Director attended the Green Investments Forum. Organized by City Light Account Executives with the assistance of the EMS division, the event informed and promoted the utility's environmental sustainability efforts. Representatives of some of City Light's largest customers presented personal case studies.

Finally, City Light's traditional energy conservation programs contribute significantly to sustainability. These programs save customers money, create healthier workplaces, and reduce air pollution and greenhouse gas emissions. In 2002 the EMS division was very active in promoting sustainability through its ongoing residential and commercial/industrial incentive and technical assistance services.

ENERGY $AVINGS PLAN PROGRAM

Description

The Energy $avings Plan (*E$P*) was discontinued in 2002, as final contracts authorized under this program were completed or otherwise terminated. In 2002 a new entity, Energy Smart Services, subsumed the former *E$P* and Energy Smart Design (*ESD)* programs. New industrial and commercial projects (including Facility Assessments) contracted in 2002 are reported in the Energy Smart Services program entry of this report. No new *E$P* projects were contracted in 2002; however, eight *E$P* projects contracted prior to 2002 were completed during the year and are included in the completed project tables for this program. The *E$P* program entry will be moved to SECTION V: DISCONTINUED COMMERCIAL-INDUSTRIAL PROGRAMS, in the next report issue.

E$P originated as a Bonneville Power Administration (BPA) sponsored retrofit program for the industrial sector. The program paid incentives for energy conservation improvements in manufacturing, processing, and refining industries. From 1988 through 1992, the BPA directly funded five *E$P* projects within Seattle City Light's service area. These five BPA projects were directly contracted between BPA and the industrial customer, with City Light Energy Management Analysts providing the site work and planning necessary to complete these projects. Since these projects were a consequence of City Light conservation staff work and have resulted in verified energy savings in the Seattle service area, the projects are reported here under the *E$P* program.

The BPA no longer directly funds *E$P* projects in Seattle. In September 1991, City Light signed an *E$P* contract with the BPA to market the program to industrial customers, to assist them in identifying and evaluating energy efficiency opportunities, to monitor efficiency measure installation, and to verify energy savings. The *E$P* program provided funding for energy reviews (audits), financial incentives for implementing energy conservation measures, and rebates for energy efficient motors. Funding by the BPA via the Third Party Financing Agreement began in June 1994. All energy review and incentive projects qualified for BPA funding were contracted before December 31, 1996. As these projects contracted prior to 1997 were completed, City Light continued through September 1999 to receive reimbursements from the BPA to supplement Seattle ratepayer conservation funding. Beginning in 1997, Seattle City Light replaced the BPA as the sole source of incentive and administrative funding for *E$P* projects.

ENERGY $AVINGS PLAN PROGRAM

An Energy Review was an analysis of an industrial plant to identify potential electric energy efficiencies and estimates of their associated costs and energy savings. The program paid an incentive to the customer for the cost of the audit, and funded the administrative cost of preparing the project proposal. Under the Incentive option of the *E$P* program, City Light paid 15 cents for each first year kilowatt-hour saved, up to 80% of the measure cost. Through 1996, 100% of this incentive amount was reimbursed by the BPA; since then City Light was the sole funder of conservation incentives.

Through 1993, the Motor Rebate feature of the *E$P* program provided a standard, fixed payment to replace motors used as part of an industrial process or end use. In 1994 the Motor Rebate option was replaced by the Electric League's Motor program which offered customers instant rebates ranging from $30 to $3,250 for purchasing energy efficient motors. The Electric League's Motor program rebates ended in 1997 due to adoption of federal motor efficiency standards. Incentives for high efficiency motors continued to be available through the *E$P* Custom Incentive option, if motors exceeded mandatory efficiency requirements and were packaged with other equipment.

E$P Incentive projects began when a City Light Energy Management Analyst assisted interested firms in developing a proposal containing a project summary, descriptions of the energy conservation measures (ECMs) to be installed, a work schedule, project cost proposal, estimated energy savings, and energy savings verification methods. If the proposal was approved, a contract between the customer and City Light was prepared. Once approved by City Light (and formerly, the BPA) installation of the ECMs could begin. Payment for installed measures was contingent on verified energy savings.

An Air Compressor Efficiency (ACE) service was delivered to a total of 18 industrial customers in 1996-1997, as part of the *E$P* Program. Participating industrial customers received a comprehensive audit of their air compressor system, along with recommendations to improve its efficiency. This service was discontinued in late 1997. Industrial customers continued to be eligible for energy audits of their industrial process end-use equipment, including air compressor systems, under the *E$P* Energy Review feature.

The Operations and Resource Assessment (ORA) Service was first offered in 1997 to City Light's commercial and industrial customers. In 2000 the ORA service was renamed the Facility Assessment (FA) service. The service was provided free to customers and was designed to help them manage operating costs and identify specific action items that could reduce both energy and non-energy (e.g., water) usage. Services provided to customers through the program included a resource-use audit at the customer's facility, a report which included recommended actions for reducing the use of electricity, water, and other resources at the facility, and a joint City Light–Customer Action Plan for implementing report recommendations. The FA service

ENERGY $AVINGS PLAN PROGRAM

was also designed as a way for customers to be referred to other City Light services that could help them.

Before initiating *E$P*, City Light conducted the Industrial Research and Demonstration Project (*IRDP*) between 1988 and 1991, to test the energy savings and cost-effectiveness for a set of 15 pilot industrial projects. The *IRDP* found that substantial, cost-effective electricity savings could be achieved, and that the potential energy savings for City Light's industrial sector could total 26.5 aMW by the year 2003. For a description of the *IRDP*, see the *Industrial Research and Demonstration Project*, in SECTION V: DISCONTINUED COMMERCIAL-INDUSTRIAL PROGRAMS.

Eligible Population

This program served business facilities where there is manufacturing, processing, or refining activity. In 2002, City Light had 259 industrial customers. (1)

Lifetime of Conservation Measures Installed

The lifetimes of measures vary, with an estimated average lifetime of 16 years. (2)

Electricity Savings

This section contains two tables. The first depicts projects contracted by City Light during the calendar year. This table shows the potential energy savings that would be realized when the projects are completed. Industrial projects may take up to two years to move from contract to completion. The first table shows some projects which were subsequently terminated. The second table presents savings realized from projects completed during the calendar year, and from cumulative participants.

Note that the energy savings (both MWh and aMW) reported in both tables reflect savings from current year participants as well as savings in that year from all prior participants for whom the measure lifetime has not yet expired. For a description of first-year savings from current year participants only, see the referenced footnotes. The line titled "electricity savings since start of program" sums savings across all the years from program inception through the current reporting year. This illustrative construct exceeds the actual savings experienced in any given calendar year.

ENERGY $AVINGS PLAN PROGRAM

In 2002 the energy savings from cumulative (1988-2002) *E$P* completed projects, including financed and facility assessment projects, were 72,541 megawatt-hours (MWh). The load reduction in 2002 due to this program was 8.281 average megawatts (aMW). Following are more details about financed projects, facility assessments, and non-incentive projects.

Financed Projects: Of the five *E$P* program options (energy review, motor rebates, Electric League instant motor rebates, incentives, and facility assessments), electricity savings are measured only for incentive projects, the instant motor rebate program, and facility assessment actions funded by customers themselves. Energy savings resulting from energy reviews are counted only if the review eventually results in one or more incentive projects. The BPA did not require site-specific estimates of savings for *E$P* Motor Rebates (in effect 1991-1993).

Since the *E$P* program began in 1988, 100 incentive projects were contracted; five of these were directly funded by the BPA. Of the 100 contracted incentive projects, 90 were completed by the end of 2002. In addition, projects were contracted and completed for eight Energy Reviews, eight *E$P* Motor Rebates, and 337 Electric League Motor Rebates.

In addition to these *E$P* industrial savings, a portion of Energy Smart Design (*ESD*) program savings result from energy conservation measures installed in industrial facilities. These *ESD*-funded measures are largely lighting, HVAC equipment (heating-ventilation-air conditioning), and other measures not directly related to industrial processes. During the years 1991 through 2002, the total savings from these conservation measures were 50,249 MWh. These savings are included as part of total program energy savings in the *ESD* program (see the *Energy Smart Design Program* entry to this report).

Facility Assessments: During 1997-2002, 32 Facility Assessment (FA) reports and action plans were completed for *industrial* customers who participated in the service. The potential electricity savings identified in these FA audits for *industrial* customers were 12,320 megawatt-hours, an average of 385 MWh per site. Realization of these savings is dependent on the customers arranging appropriate financing and installing the conservation measures in the facilities. This financing can be done by the customers themselves or through the *E$P, ESD* and *ESS* programs offered by Seattle City Light. When the customers themselves finance these actions, the savings are presented in the completed savings table under the *Facility Assessment* category. Between 1997 and 2002, an estimated 715 MWh of savings were financed by industrial FA customers. Savings financed by City Light through the *E$P, ESD* and *ESS* programs are presented in the table under the relevant program component (e.g., *Incentive*).

Most customers who participated in Facility Assessments were referred to one or more additional City Light services. Program records indicate that, from 1998 through 2002, 76 % of FA participants were referred to the financial incentives available for conservation measures

ENERGY $AVINGS PLAN PROGRAM

installed through the *ESD* or *E$P* programs. Participants were also referred to a variety of City services, including the Water Smart Technology Program offered by Seattle Public Utilities, City Light's non-incentive services, power factor and power quality correction services, and to the appropriate City Light staff to resolve billing or rate questions. (For more information about Facility Assessments, see the *Energy Smart Design Program* entry in this report.)

Non-incentive Projects: Electrical energy savings were also achieved by customers who received facility assessments or technical assistance from City Light, and then installed conservation measures at their own expense in their facilities. These measures consist of both equipment replacement, and operation and maintenance actions.

In 1996 through 2000, some non-incentive project customers took Air Compressor Efficiency (ACE) conservation actions that were estimated to have annual energy savings of 10,562 MWh. Of these total ACE savings, 9,882 MWh were acquired in industrial facilities and 679 MWh in commercial facilities. The majority of these savings were revealed in an evaluation of the ACE service conducted in early 1998. These savings include 8,736 MWh from fully implemented recommendations and 1,187 MWh from partially installed measures. The remainder of ACE savings occurred in 2000, when 639 MWh from ACE recommendations were verified and recorded. The 1998 ACE evaluation also showed that the service was generally well received, with an overall customer satisfaction rating of 4.4, where 5 represents "very satisfied". (3)

In addition to the 10,562 MWh in ACE savings, during the six-year period 1997-2002 industrial customers took non-incentive conservation actions that were estimated to have annual energy savings of 16,169 MWh. These savings are <u>not</u> included in the following *E$P* savings tables. For a summary of non-incentive energy savings, see *Table 12: Seattle City Light Conservation Plan Accomplishments*, in SECTION I: SUMMARY OF ACCOMPLISHMENTS AND EXPENDITURES.

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Contracted Projects —

Year	*Contracted Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
BPA Direct-Funded Projects Contracted:						
1988	Incentive	2	2	1,425,849	2,852	0.326
1989	Incentive	1	3	211,690	3,063	0.350
1990	Incentive	1	4	1,711,570	4,775	0.545
1991	Incentive	1	5	1,388,638	6,164	0.704
1992	Incentive	0	5	0	6,164	0.704
1993	Incentive	0	5	0	6,164	0.704
1994	Incentive	0	5	0	6,164	0.704
1995	Incentive	0	5	0	6,164	0.704
1996	Incentive	0	5	0	6,164	0.704
1997	Incentive	0	5	0	6,164	0.704
1998	Incentive	0	5	0	6,164	0.704
1999	Incentive	0	5	0	6,164	0.704
2000	Incentive	0	5	0	6,164	0.704
2001	Incentive	0	5	0	6,164	0.704
2002	Incentive	0	5	0	6,164	0.704
Potential Electricity Savings Since Start of Program:					84,655	MWh
Joint City Light/BPA Projects Contracted:						
1991	Energy Review	1	1	0	0	0.000
	Motor Rebate	1	1	0	0	0.000
	Incentive	3	3	1,067,013	3,201	0.365
1992	Energy Review	0	1	0	0	0.000
	Motor Rebate	4	5	0	0	0.000
	Incentive	7	10	656,999	7,800	0.890
1993	Energy Review	3	4	0	0	0.000
	Motor Rebate	3	8	0	0	0.000
	Incentive	7	17	793,373	13,354	1.524
1994	Energy Review	2	6	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	17	17	2,590	44	0.005
	Incentive	16	33	752,874	25,400	2.900
1995	Energy Review	1	7	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	165	182	3,692	653	0.075
	Incentive	21	54	451,015	34,871	3.981
1996	Energy Review	0	7	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	142	324	2,996	1,079	0.123
	Incentive	13	67	734,948	44,425	5.071

(Cont'd.)

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Contracted Projects —

(Continued)

Year	*Contracted Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
City Light Projects Contracted:						
1997	Facility Assessment	3	3	22,343	67	0.008
	Energy Review	1	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	13	337	3,645	1,126	0.129
	Incentive	6	73	880,942	49,711	5.675
1998	Facility Assessment	8	11	22,343	246	0.028
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	2	75	2,391,276	54,493	6.221
1999	Facility Assessment	9	20	22,343	447	0.051
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	7	82	620,422	58,836	6.716
2000	Facility Assessment	6	26	22,343	581	0.066
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	2	84	540,333	59,917	6.840
2001	Facility Assessment	5	31	22,343	693	0.079
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	11	95	820,507	68,943	7.870
2002	Facility Assessment	0	34	0	760	0.087
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	0	95	0	68,943	7.871
Potential Electricity Savings Since Start of Program:					501,286	MWh

(Cont'd.)

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Contracted Projects —

(Continued)

Year	*Contracted Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
Total Program:						
1988	All Types	2	2	—	2,852	0.326
1989	All Types	1	3	—	3,063	0.350
1990	All Types	1	4	—	4,775	0.545
1991	All Types	6	10	—	9,365	1.069
1992	All Types	11	21	—	13,964	1.594
1993	All Types	13	34	—	19,517	2.228
1994	All Types	35	69	—	31,608	3.608
1995	All Types	187	256	—	41,688	4.759
1996	All Types	155	411	—	51,667	5.898
1997	All Types	23	434	—	57,068	6.515
1998	All Types	10	444	—	62,029	7.081
1999	All Types	16	460	—	66,573	7.600
2000	All Types	8	468	—	67,788	7.738
2001	All Types	19	487	—	76,992	8.789
2002	All Types	0	487	—	76,992	8.789
Potential Electricity Savings Since Start of Program:					**585,939**	**MWh**

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Completed Projects —

Year	*Completed Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
BPA Direct-Funded Projects Completed:						
1988	Incentive	0	0	0	0	0.000
1989	Incentive	1	1	927,024	927	0.106
1990	Incentive	1	2	1,924,655	2,852	0.326
1991	Incentive	1	3	211,690	3,063	0.350
1992	Incentive	2	5	1,551,788	6,167	0.704
1993	Incentive	0	5	0	6,167	0.704
1994	Incentive	0	5	0	6,167	0.704
1995	Incentive	0	5	0	6,167	0.704
1996	Incentive	0	5	0	6,167	0.704
1997	Incentive	0	5	0	6,167	0.704
1998	Incentive	0	5	0	6,167	0.704
1999	Incentive	0	5	0	6,167	0.704
2000	Incentive	0	5	0	6,167	0.704
2001	Incentive	0	5	0	6,167	0.704
2002	Incentive	0	5	0	6,167	0.704
Electricity Savings Since Start of Program:					74,679	MWh
Joint City Light/BPA Projects Completed:						
1991	Energy Review	0	0	0	0	0.000
	Motor Rebate	0	0	0	0	0.000
	Incentive	0	0	0	0	0.000
1992	Energy Review	1	1	0	0	0.000
	Motor Rebate	3	3	0	0	0.000
	Incentive	2	2	396,741	793	0.091
1993	Energy Review	1	2	0	0	0.000
	Motor Rebate	3	6	0	0	0.000
	Incentive	8	10	633,874	5,864	0.669
1994	Energy Review	2	4	0	0	0.000
	Motor Rebate	2	8	0	0	0.000
	Electric League Motor	17	17	2,590	44	0.005
	Incentive	12	22	316,330	9,660	1.103
1995	Energy Review	2	6	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	165	182	3,692	653	0.075
	Incentive	10	32	1,410,929	23,770	2.713
1996	Energy Review	1	7	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	142	324	2,996	1,079	0.123
	Incentive	17	49	547,459	33,077	3.776

(Cont'd.)

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Completed Projects —

(Continued)

Year	*Completed Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
Projects Completed:						
1997	Energy Review	0	7	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	13	337	3,645	1,126	0.129
	Incentive	9	58	503,041	37,604	4.293
1998	Facility Assessment	9	9	22,343	201	0.023
	Energy Review	0	7	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	5	63	483,209	40,020	4.568
1999	Facility Assessment	9	18	22,343	402	0.046
	Energy Review	1	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	4	67	3,317,257	53,289	6.083
2000	Facility Assessment	6	24	22,343	536	0.061
	Energy Review	0	8	0`	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	3	70	548,270	54,934	6.271
2001	Facility Assessment	5	29	22,343	648	0.074
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	7	77	406,001	57,776	6.595
2002	Facility Assessment	3	32	22,343	715	0.082
	Energy Review	0	8	0	0	0.000
	Motor Rebate	0	8	0	0	0.000
	Electric League Motor	0	337	0	1,126	0.129
	Incentive	8	85	844,630	64,533	7.367
Electricity Savings Since Start of Program:					392,354	MWh

(Cont'd.)

ENERGY $AVINGS PLAN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY $AVINGS PLAN PROGRAM
— Completed Projects —

(Continued)

Year	*Completed Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
Total Program:						
1988	All Types	0	0	—	0	0.000
1989	All Types	1	1	—	927	0.106
1990	All Types	1	2	—	2,852	0.326
1991	All Types	1	3	—	3,063	0.350
1992	All Types	8	11	—	6,960	0.795
1993	All Types	12	23	—	12,031	1.373
1994	All Types	33	56	—	15,871	1.812
1995	All Types	177	233	—	30,590	3.492
1996	All Types	160	393	—	40,322	4.603
1997	All Types	22	415	—	44,897	5.125
1998	All Types	14	429	—	47,514	5.424
1999	All Types	14	443	—	60,984	6.962
2000	All Types	9	452	—	62,763	7.165
2001	All Types	12	464	—	65,717	7.502
2002	All Types	11	475	—	72,541	8.281
Electricity Savings Since Start of Program:					**467,033**	**MWh**

ENERGY $AVINGS PLAN PROGRAM

Program Expenditures

Program expenditures have been separated between completed projects directly funded by the BPA, and completed projects that were jointly funded by City Light and the BPA.

City Light expended a total of $12,380,623 on *E$P* projects completed from 1988 through 2002. Of this amount, $5,350,956 were expended for administrative costs, including assistance to the BPA for completing their direct-funded projects, and $7,029,667 of incentives were paid to participants for jointly-funded projects completed during that time period. Total expenditures by City Light during 2002 of $772,427 represent the cost to the utility and not the total resource cost.

Expenditures for serving industrial Facility Assessment participants in 1997-2001, totaling $120,957, are included in administrative costs for these years. By year, these FA service costs were $13,761 in 1997, $41,392 in 1998, $15,749 in 1999, $41,698 in 2000, and $8,357 in 2001. FA expenses for *commercial* customers in 1997-2001 were charged to the Energy Smart Design Program budget; for more information, see the *ESD* entry in this report. Beginning in 2002, FA costs for both industrial and commercial facilities are included in administrative costs of the *Energy Smart Services Program*.

SEATTLE CITY LIGHT PROGRAM EXPENDITURES FOR THE ENERGY $AVINGS PLAN PROGRAM (6)

Year	*Administration*	*Incentive Payments Contracted in Year* (7)	*All Payments for Projects Completed in Year* (7)	*Actual Expenditures in Year* (7)	*Total Expenditures Joint Pgm*
1988	$8,213	$0	$0	$0	$8,213
1989	7,538	0	0	0	7,538
1990	10,727	0	0	0	10,727
1991	18,148	278,427	0	0	18,148
1992	44,376	510,377	91,962	182,163	226,539
1993	205,565	632,223	632,796	566,467	772,032
1994	375,526	1,303,439	527,787	538,751	914,277
1995	701,117	1,356,125	1,225,272	1,471,433	2,172,550
1996	883,213	1,205,896	1,185,930	1,168,440	2,051,652
1997	751,185	349,129	413,252	603,607	1,354,792
1998	577,490	609,582	357,320	357,320	934,810
1999	697,987	231,442	1,076,403	1,076,403	1,774,390
2000	525,702	125,272	215,505	55,694	581,396
2001	452,462	1,142,419	368,974	328,669	781,131
2002	91,707	0	640,226	680,720	772,427
TOTAL	**$5,350,956**	**$7,744,331**	**$6,735,427**	**$7,029,667**	**$12,380,623**

ENERGY $AVINGS PLAN PROGRAM

Between 1988 and 1999, the BPA reimbursed to City Light $4,597,042 for completed jointly-funded projects. Payments to customers for BPA direct-funded projects completed from 1988 through 1992 totaled an additional $413,827.

BPA FUNDING / REIMBURSEMENT TO SEATTLE CITY LIGHT FOR THE ENERGY $AVINGS PLAN PROGRAM (8)

Year	*Administration*	*Measures*	*Total Funding*
1991	$0	$0	$0
1992	1,640	136,272	137,912
1993	41,082	463,374	504,456
1994	56,356	536,700	593,056
1995	40,000	1,327,049	1,367,049
1996	0	1,154,526	1,154,526
1997	0	508,336	508,336
1998	0	169,707	169,707
1999	0	162,000	162,000
2000-2002	0	0	0
Total	**$139,078**	**$4,457,964**	**$4,597,042**

BPA DIRECT PAYMENTS TO SEATTLE CITY LIGHT CUSTOMERS FOR THE ENERGY $AVINGS PLAN PROGRAM (9)

	Payments to Participants		
Year	*Contracted BPA-Direct*	*Completed BPA-Direct*	*Total Payments*
1988	$133,571	$0	$0
1989	97,260	35,826	35,826
1990	95,581	97,745	97,745
1991	87,415	97,260	97,260
1992	0	182,996	182,996
1993-2002	0	0	0
Total	**$413,827**	**$413,827**	**$413,827**

ENERGY $AVINGS PLAN PROGRAM

Notes

1. The eligible population figures are from the *Seattle City Light 2001 Annual Report.*

2. There is considerable variability in the lifetime of the conservation measures installed by participants in *E$P*. For example, the lifetime for energy efficient fluorescent lamps is short, averaging nine years, while the lifetime of a parabolic fixture can range from nine to as many as forty years. Variable speed DC motors can perform within a range of twelve to twenty-five years. (See "Use of Commercial Energy Efficiency Measure Service Life Estimates In Program and Resource Planning", in Proceedings of the 1988 ACEEE Summer Study on Energy Efficiency in Buildings, vol. 3, pp. 3.84-3.96.) The 16 year conservation measures lifetime presented in this report is an average of the lifetimes for different measures.

3. ACE savings are based on post-service interviews of twelve customers who participated in the Air Compressor Efficiency project. For more information, see the *Air Compressor Efficiency (ACE) Service: Customer & Staff Feedback Survey*.

   In 1997 non-incentive projects with industrial customers yielded 401 MWh, while 316 MWh were attained through Facility Assessments and Follow-ups. In 1998 no non-incentive industrial savings were recorded. In 1999 non-incentive projects yielded 3,580 MWh, savings of 8,109 MWh resulted from the BPA's Conservation Resource Acquisition program, and 1,282 MWh were obtained from other non-incentive industrial services. During 2000, 1,143 MWh were obtained from non-incentive operations and maintenance services. Savings achieved through non-incentive E$P services to industrial facilities were 738 MWh in 2001, and 599 MWh in 2002. For 1997-2001, the source of non-incentive savings data is the "non-incentive table" of the Commercial / Industrial Tracking System (CITS). Beginning in 2002, these savings are reported in the new CITS system "Non-Incentive Measures Report" query.

4. Data on the number of contracted and completed projects by year were obtained from the Commercial/ Industrial Tracking System and from "Energy Savings Plan, Installed Measures for Seattle City Light Customers" (Autherine Brown, BPA Puget Sound Area Office).

5. The source of the energy savings for four of the five BPA-direct funded projects for 1988 through 1992 (Darigold Inc., Northwestern Industries, Seafreeze, and Associated Grocers) is a document titled Energy Savings Plan Installed Measures for Seattle City Light Customers, Autherine Brown, BPA Puget Sound Area Office, 1993). Energy savings for the remaining BPA-direct funded project (Ball-Incon) was taken from an evaluation report titled, Impact Evaluation of an Adjustable Speed Drive Installed at Ball-Incon Glass Packaging Corporation Under the Energy $avings Plan (Pacific Northwest Laboratory–PNL, May 1993). The sources for City Light project energy savings are the E$P "Completion Report" and the E$P Industrial Tracking System. Savings estimates for Holnam Industries, projects 1, 3, 4 and 6, were taken from PNL's report, Impact Evaluation of an Energy $avings Plan Project at Holnam Incorporated (May 1993).

   A total of five E$P projects completed between 1989 and 1992 were funded directly between the BPA and industrial customers in the Seattle area. Energy savings were not estimated for the original motor rebate program projects completed between 1992 and 1994. However, in 1994 City Light joined with the Electric League in a new motor rebate program and energy savings began to be estimated. City Light contributed to a revolving fund account with the Electric League (administered by Tacoma Public Utilities) to pay the rebates.

ENERGY $AVINGS PLAN PROGRAM

Energy audits are advisory and therefore do not result in energy savings, unless the customer decides to follow-up on the audit by completing an incentive project.

First year energy savings from new participants completing work in each year were: 927 MWh (1989); 1,925 MWh (1990); 212 MWh (1991); 3,897 MWh (1992); 5,071 MWh (1993); 3,840 MWh (1994); 14,718 MWh (1995); 9,732 MWh (1996); 4,575 MWh (1997); 2,617 MWh (1998); 13,470 MWh (1999); 1,779 MWh (2000); 2,954 MWh (2001); and 6,824 MWh (2002).

In addition to these first year savings from E$P-completed projects, a portion of Energy Smart Design (ESD) program savings result from energy conservation measures installed in industrial facilities. These *ESD*-funded measures are largely for lighting, HVAC equipment, and other measures not directly related to industrial processes. The 50,249 MWh of *ESD* program savings in industrial facilities were extracted from the C-I Tracking System database. These savings have been adjusted to reflect the realization rate for *ESD* projects in new construction (realization factor = 0.49) and in existing buildings (realization factor = 0.95). Corrected *ESD* savings in industrial settings, by year, were: 111 MWh (1991); 717 MWh (1992); 3,379 MWh (1993); 959 MWh (1994); 2,541 MWh (1995); 857 MWh (1996); 1,681 MWh (1997); 3,691 MWh (1998); 3,292 MWh (1999); 12,502 MWh (2000); 14,392 MWh (2001); and 6,127 MWh (2002). These contracted and completed energy savings are reported under the Energy Smart Design Program.

6. Information on the costs in 1988-1990 for City Light administration and payments for jointly funded, contracted and completed projects were obtained from monthly or annual Cost Ledger Reports for Work Order Nos. 70559-01 and 70559-02. In 1991-2002 cost data for Activity/Work Order Nos. 70559 and 70589 were drawn from Seattle Financial Management System and Summit System reports. In 1994-2002 payments for contracted projects were obtained from the E$P tracking system.

   In 1992 one of the BPA direct-funded projects (Associated Grocers) was partially funded through *E$P* ($87,415, or 74% of total participant payments for this project), with the remainder ($31,000, or 26%) coming from City Light's *Industrial Research and Demonstration Project.* Expenditures and a proportionate amount of verified energy savings have been assigned to these two programs.

   Administrative costs for 1995-2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours. In 1993 the A&G overhead charge for the *E$P* was $44,156, or 21% of Seattle City Light's total programmatic administrative expenditures. In 1994 the A&G overhead charge was $84,383 (22%), while in 1995 the A&G overhead charge was $171,387 (24%).

7. Incentive payments for <u>contracted</u> projects represent the projected cost of payments for participating projects under contract with Seattle City Light. The costs identified as "all payments for projects <u>completed</u> in year" represent all customer incentives for projects completing installation during the year. These incentives were paid over the life of the project, and include any partial payments actually made in a prior year. The amounts of these project-life incentive payments to customers were obtained from financial records in the Commercial–Industrial Section, Energy Management Services Division. The "actual expenditures in year" represent monies spent in the calendar year for projects receiving partial or full incentives during the year; some of these projects may have received an earlier partial payment, or be scheduled to receive another partial payment in a future year. Total expenditures are reported here as the sum of administration costs plus actual incentive payments in the year.

ENERGY $AVINGS PLAN PROGRAM

In 2000, reimbursement from one customer was received for a program measure later removed and returned to the manufacturer. This measure was contracted in 1998 with installation completed in 1999. The total expenditures in those years still include the cost of this measure ($32,340) to reflect actual program activities at the time; however, actual expenditures in 2000 have been reduced by that amount. Total measures installed in 2000 cost $88,034.

8. Data on BPA reimbursements to City Light for administration and payments to program participants, whether financed by third parties or not, were taken from Commercial–Industrial Section records of invoices sent to the BPA. From the period 1988 through 1991, all completed *E$P* projects were funded directly between the BPA and the participating industrial customer. In 1992 the BPA began reimbursing City Light for up to 75% of its incentive payments to participants. Starting in BPA's Fiscal Year 1993 (10/01/92), the BPA began reimbursing City Light for 100% of its incentive payments to participants.

   The BPA ceased funding to Seattle City Light for *E$P* projects contracted since January 1, 1997. Reimbursements received from the BPA during 1997 and thereafter are for *E$P* projects contracted prior to January 1, 1997 but not completed (and customers paid) until some time after that date.

9. Payments to participants for contracted and completed projects directly funded by the BPA were obtained from "Energy Savings Plan, Installed Measures for Seattle City Light Customers" (Autherine Brown, BPA Puget Sound Area Office).

ENERGY SMART DESIGN PROGRAM

Description

The Energy Smart Design Program (*ESD*) will be discontinued in 2003, as final contracts authorized under this program are completed or otherwise terminated. In 2002 a new entity, Energy Smart Services, subsumed the former *ESD* and Energy Savings Plan (*E$P)* programs. New industrial and commercial projects (including Facility Assessments) contracted in 2002 are reported in the Energy Smart Services program entry of this report. No new *ESD* projects were contracted early in 2002; however, 96 *ESD* projects contracted prior to 2002 were completed during the year and are included in the completed project tables for this program, and only 11 projects remain to be completed at year end. The *ESD* program entry will be moved to SECTION V: DISCONTINUED COMMERCIAL-INDUSTRIAL PROGRAMS, in the next report issue.

Seattle City Light first implemented the Bonneville Power Administration's Energy Smart Design Program in 1988. In that year the program's Design Assistance option began offering technical and financial assistance to building owners and developers, for designing conservation measures to increase the energy efficiency of new and remodeled commercial buildings. The energy efficiency alternatives identified in these analyses could be installed at the option of the building owner.

In 1991 the Energy Smart Design Program was expanded to include financial assistance for installing conservation measures in both new and existing buildings. Customers could participate in the Rebate option for the most common lighting, motor, and heating-ventilating-air conditioning (HVAC) measures. The rebates were offered to customers to pay a standard, fixed amount for the installation of energy-efficiency equipment in buildings. Site-based Incentives were also available to customers for conservation measures not included on the rebate list.

In October 1993, the *ESD* program was redesigned so that two types of incentives are now offered to customers for installing conservation measures in their buildings. The first type, Standard Incentives, is for lighting, HVAC system, and motor measures. Custom Incentives are also available to customers for building envelope measures, energy management control systems, and other measures not covered by Standard Incentives.

Beginning in 1994, Tailored Agreements were also reached with four large customers to install efficiency measures in multiple, complex sites: the University of Washington, Seattle Public Schools, City of Seattle, and King County.

ENERGY SMART DESIGN PROGRAM

The Facility Assessment (FA) Audit, formerly known as the Operations and Resource Assessment Service, was first offered in 1997 to City Light's commercial and industrial customers. The no-cost service is designed to help customers manage their operating costs and identify specific action items that can reduce both energy and non-energy (e.g., water) usage. Services provided to customers through the program include a resource-use audit at the customer's facility, a report which includes recommended actions for reducing the use of electricity, water, and other resources at the facility, and a joint City Light–Customer Action Plan for implementing report recommendations.

The *ESD* 10+10 Incentive Bonus program was launched in mid-January 2001 to stimulate customers to install conservation improvements through the *ESD* program. The two-part bonus provided a 10% extra incentive for customers who contracted with City Light for retrofit projects by July 31, 2001 and a second 10% bonus if they completed their projects by November 30, 2001. By year-end 2001, City Light signed 337 new *ESD* contracts; nearly triple the 135 incentive projects contracted in 2000. During 2001 the increased demand for conservation and the expanded budget and staff resources needed to achieve the higher savings goals resulted in the largest number of contracted projects since 1992 and the largest total first-year savings (63,000 MWh) in the history of the ESD program at City Light.

Also in 2001, City Light engaged a consultant to deliver building tune-up services to six large commercial customers. Working with the Account Executives Office, staff marketed this service to selected buildings to help customers identify immediate Operations and Maintenance savings opportunities.

For information regarding the $mart Business program for small commercial businesses, formerly reported with the Energy Smart Design Program, see the *$mart Business Programs* entry in this report.

Eligible Population

The *ESD* program focuses on new and existing commercial, institutional, and government buildings; the program also serves non-process end uses in industrial facilities. In 2002, Seattle City Light had 1,776 government and 30,934 commercial accounts (of which about 16% qualify for *ESD* services, the remainder being small commercial accounts). (1)

ENERGY SMART DESIGN PROGRAM

Lifetime of Conservation Measures Installed

The lifetime of the measures ranges from 5 to 35 years, depending on the type of measure. The average lifetime of *ESD* new construction and retrofit project measures is 15 years.

Electricity Savings

This section contains two tables. The first depicts projects contracted by City Light during the calendar year. This table shows the potential energy savings that would be realized when the projects are completed. Commercial projects may take up to three years to move from contract to completion. The first table shows some projects which were subsequently terminated. The second table presents savings realized from projects completed during the calendar year, and from cumulative participants.

Note that the energy savings (both MWh and aMW) reported in both tables reflect savings from current year participants as well as savings in that year from all prior participants for whom the measure lifetime has not yet expired. For a description of first-year savings from current year participants only, see the referenced footnotes. The line titled "electricity savings since start of program" sums savings across all the years from program inception through the current reporting year. This illustrative construct exceeds the actual savings experienced in any given calendar year.

The following tables document savings from all *ESD* projects. In 2002 the energy savings from cumulative (1989-2002) completed projects, including financed and facility assessment projects, were 392,746 megawatt-hours (MWh). The load reduction in 2002 due to this program was 44.834 average megawatts (aMW). Following are more details about financed projects, facility assessments, and non-incentive projects.

Financed Projects: Energy savings are presented for the 2,519 projects contracted in the 1989-2002 period. Based on an evaluation of the *ESD* program, savings projected by engineering calculations were reduced by 5% for retrofit projects and 51% for new construction projects. Savings for the five new *ESD* projects contracted during 2002 totaled 61 megawatt-hours (MWh), or 0.007 average megawatts (aMW). As of 2002 the cumulative savings expected from all contracted *ESD* projects total 453,366 MWh, or 51.754 aMW. Many of the contracted projects will be completed in 2003-2004.

ENERGY SMART DESIGN PROGRAM

Energy savings are estimated for 2,339 projects completed in 1991 through 2002 (some customers having conducted multiple projects over that time span). Projects and their associated energy savings are not counted as completed until the year in which the participating customer receives their final incentive payment. As with contracted projects, the projected savings were reduced by 5% for retrofit projects and 51% for new construction projects. With this adjustment, energy savings for *ESD* projects completed during 2002 were 23,364 MWh, or 2.667 aMW.

ESD energy savings also result from providing conservation measure incentives over the period 1994-2002 to four Tailored Agreement customers. Measures were installed in multiple facilities over several years for each of these customers; a total of seven contracts were involved (one was later terminated, in May 2002). Energy savings from these projects were recorded in the energy savings tables as work in each facility was begun and completed. However, the six contracts were noted under "projects by year" when the full complement of work under each was completed. During 2002, the last of the six Tailored Agreement contracts was completed, with cumulative energy savings of 58,480 MWh, or 6.676 aMW.

A small portion of the *ESD* energy savings result from installing energy conservation measures in industrial facilities. The measures installed were largely lighting, HVAC, and other measures not directly related to industrial processes. During the years 1991 through 2002, the total savings from these conservation measures were 50,249 MWh, amounting to 12.8% of total *ESD* savings. Additional information on these projects can be found in Note 4, below, and in the *Energy $avings Plan Program* entry to this report.

Facility Assessment Audit: During 1998-2002, 158 Facility Assessment (FA) reports and action plans were completed for *commercial* customers who participated in the service. The potential electricity savings identified in these FA audits were 67,449 MWh, an average of 427 MWh per site. Realization of these savings is dependent on customers arranging appropriate financing and installing the conservation measures in the facilities. This financing can be done by the customers themselves or through the *ESD* and *E$P* programs offered by Seattle City Light. When the customers themselves finance these actions, the savings are presented in the completed savings table under the *Facility Assessment* category. Between 1998 and 2002, an estimated 3,530 MWh of savings were financed by commercial FA customers. Savings financed by City Light through the *ESD* or *E$P* programs are presented in the table under the relevant program component (e.g., *Standard Incentive*).

A comprehensive evaluation of the FA audit service was completed in May 2000. The electrical savings realization rate for the evaluation sample was 41%, with *commercial* savings of 7,274,689 kWh. About three-fourths of the savings were obtained by FA participants who subsequently took part in City Light's *ESD* and *E$P* programs. The remaining one-fourth of the

ENERGY SMART DESIGN PROGRAM

commercial savings, 1,930,061 kWh, came from FA participants who took recommended conservation actions on their own.

Most customers who participated in FA were referred to one or more additional City Light services. Program records indicate that, from 1998 through 2002, 76 % of FA participants were referred to the financial incentives available for conservation measures installed through the *ESD* or *E$P* programs. Participants were also referred to a variety of City services, including the Water Smart Technology Program offered by Seattle Public Utilities, City Light's non-incentive services, power factor and power quality correction services, and to the appropriate City Light staff to resolve billing or rate questions. (For more information about Facility Assessments, see the *Energy $avings Plan Program* entry in this report.)

Non-incentive Projects: Electrical energy savings are also achieved by customers who receive facility assessments or technical assistance from City Light, and then install conservation measures at their own expense in their facilities. These measures consist of both equipment replacement, and operation and maintenance actions.

During the six-year period 1996-2002, commercial customers took non-incentive conservation actions that were estimated to have annual energy savings of 11,458MWh. About 64% of these savings result from equipment replacements, with the remaining 36% being operation and maintenance actions. These savings are not included in the following *ESD* savings tables. For a summary of non-incentive energy savings, see *Table 12: Seattle City Light Conservation Plan Accomplishments*, in SECTION I: SUMMARY OF ACCOMPLISHMENTS AND EXPENDITURES.

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Contracted Projects —

Year	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (3)	*Avg. MW Load Reduction in Year*
Design Assistance Services:						
1989	12	12	2,788,583	0	0	0.000
1990	22	34	2,964,698	0	0	0.000
1991	44	78	4,946,564	0	0	0.000
1992	58	136	8,683,173	0	0	0.000
1993	13	149	1,748,000	0	0	0.000
1994	10	159	1,799,500	0	0	0.000
1995	6	165	302,500	0	0	0.000
1996	4	169	750,560	0	0	0.000
1997	4	173	166,634	0	0	0.000
1998	11	184	258,000	0	0	0.000
1999	5	189	130,000	0	0	0.000
2000	8	197	491,105	0	0	0.000
2001	6	203	1,164,342	0	0	0.000
2002	0	203	—	0	0	0.000
Design Document Services:						
1991	2	2	81,504	0	0	0.000
1992	1	3	450,000	0	0	0.000
1993	0	3	—	0	0	0.000
1994	0	3	—	0	0	0.000
1995	0	3	—	0	0	0.000
1996	2	5	310,000	0	0	0.000
1997	0	5	—	0	0	0.000
1998	0	5	—	0	0	0.000
1999	0	5	—	0	0	0.000
2000	0	5	—	0	0	0.000
2001	0	5	—	0	0	0.000
2002	0	5	—	0	0	0.000
Commissioning Services:						
1993	1	1	1,500,000	0	0	0.000
1994	0	1	—	0	0	0.000
1995	0	1	—	0	0	0.000
1996	1	2	766,796	0	0	0.000
1997	1	3	527,800	0	0	0.000
1998	3	7	1,000,000	0	0	0.000
1999	0	7	1,063,000	0	0	0.000
2000	0	7	—	0	0	0.000
2001	0	7	—	0	0	0.000
2002	0	7	—	0	0	0.000

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Contracted Projects —

(Continued)

Year	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (3)	*Avg. MW Load Reduction in Year*
Rebate Option & Standard Incentive Services:						
1991	126	126	17,215,727	149,289	18,810	2.147
1992	242	368	23,342,444	91,193	40,879	4.667
1993	173	541	16,007,094	170,697	70,410	8.038
1994	183	724	11,330,862	154,479	98,679	11.265
1995	203	927	16,323,787	136,669	126,423	14.432
1996	116	1,043	10,116,063	121,516	140,519	16.041
1997	155	1,198	11,154,289	92,739	154,894	17.682
1998	120	1,318	9,676,929	117,076	168,943	19.286
1999	103	1,421	13,383,704	78,234	177,001	20.206
2000	84	1,505	6,269,275	182,509	192,332	21.956
2001	219	1,724	9,480,155	163,314	228,097	26.038
2002	0	1,724	—	—	228,097	26.038
Site-based & Custom Incentive Services:						
1991	12	12	924,499	660,466	7,926	0.905
1992	56	68	9,901,980	324,331	26,088	2.978
1993	77	145	15,378,999	381,043	55,428	6.327
1994	31	176	3,885,104	275,290	63,962	7.302
1995	28	204	1,403,707	350,704	73,782	8.423
1996	15	219	3,071,116	404,751	79,853	9.116
1997	20	239	5,461,447	539,105	90,636	10.347
1998	28	267	3,669,529	610,796	107,738	12.299
1999	23	290	5,879,969	210,099	112,570	12.850
2000	23	313	4,402,558	237,437	118,031	13.474
2001	92	405	26,755,246	290,818	144,786	16.528
2002	0	405	—	0	144,786	16.528
Tailored Agreement Services:						
1994	1	1	—	—	23,007	2.626
1995	0	1	—	—	35,948	4.104
1996	4	5	—	—	63,662	7.219
1997	0	5	—	—	65,847	7.517
1998	0	5	—	—	66,609	7.604
1999	1	6	—	—	70,361	8.032
2000	0	6	—	—	76,735	8.760
2001	0	6	—	—	76,735	8.760
2002	0	6	—	—	76,735	8.760

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Contracted Projects —

(Continued)

Year	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (3)	*Avg. MW Load Reduction in Year*
Facility Assessments:						
1997	10	10	—	22,343	223	0.026
1998	62	72	—	22,343	1,609	0.184
1999	42	114	—	22,343	2,547	0.291
2000	21	135	—	22,343	3,016	0.344
2001	30	165	—	22,343	3,687	0.421
2002	0	165	—	22,343	3,687	0.421
Total Program (all service types):						
1989	12	12	2,788,583	—	0	0.000
1990	22	34	2,964,698	—	0	0.000
1991	184	218	23,168,294	—	26,736	3.052
1992	357	575	42,377,597	—	66,967	7.645
1993	264	839	34,634,093	—	125,838	14.365
1994	225	1,064	17,015,466	—	185,649	21.193
1995	237	1,301	18,029,994	—	236,153	26.958
1996	142	1,443	15,014,535	—	284,035	32.424
1997	190	1,633	17,310,170	—	311,600	35.571
1998	222	1,855	14,604,458	—	344,898	39.372
1999	177	2,032	20,456,673	—	362,479	41.379
2000	136	2,168	11,162,938	—	390,114	44.534
2001	347	2,515	37,399,743	—	453,305	51.747
2002	0	2,515	—	—	453,305	51.747
Potential Electricity Savings Since Start of Program:					**3,241,079**	**MWh**

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Completed Projects —

Year	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (4)	*Avg. MW Load Reduction in Year*
Design Assistance Services:						
1989	2	2	538,565	0	0	0.000
1990	7	9	934,305	0	0	0.000
1991	32	41	3,215,610	0	0	0.000
1992	64	105	9,845,723	0	0	0.000
1993	26	131	3,722,122	0	0	0.000
1994	16	147	15,592,980	0	0	0.000
1995	7	154	1,362,597	0	0	0.000
1996	5	159	280,060	0	0	0.000
1997	4	163	282,000	0	0	0.000
1998	7	170	258,000	0	0	0.000
1999	5	175	794,876	0	0	0.000
2000	6	181	695,192	0	0	0.000
2001	5	186	1,224,342	0	0	0.000
2002	7	193	—	0	0	0.000
Design Document Services:						
1991	0	0	—	0	0	0.000
1992	0	0	—	0	0	0.000
1993	1	1	450,000	0	0	0.000
1994	2	3	81,504	0	0	0.000
1995	0	3	—	0	0	0.000
1996	0	3	—	0	0	0.000
1997	1	4	135,000	0	0	0.000
1998	0	4	—	0	0	0.000
1999	0	4	—	0	0	0.000
2000	0	4	—	0	0	0.000
2001	1	5	175,000	0	0	0.000
2002	0	5	—	0	0	0.000
Commissioning Services:						
1993	0	0	—	0	0	0.000
1994	1	1	1,500,000	0	0	0.000
1995	0	1	—	0	0	0.000
1996	0	1	—	0	0	0.000
1997	1	2	766,456	728,456	728	0.083
1998	0	2	—	0	728	0.083
1999	1	3	1,063,000	0	728	0.083
2000	2	5	852,800	0	728	0.083
2001	2	7	513,000	0	728	0.083
2002	0	7	—	0	728	0.083

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Completed Projects —

(Continued)

Year	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (4)	*Avg. MW Load Reduction in Year*
Rebate Option & Standard Incentive Services:						
1991	72	72	5,229,185	104,707	7,539	0.861
1992	200	272	20,930,065	71,878	21,915	2.502
1993	164	436	14,420,997	94,587	37,427	4.272
1994	172	608	11,764,710	157,636	64,540	7.368
1995	180	788	11,075,268	132,959	88,473	10.100
1996	135	923	13,416,958	165,234	110,779	12.646
1997	144	1,067	12,423,060	99,426	125,097	14.280
1998	110	1,177	9,588,572	141,077	140,615	16.052
1999	106	1,283	14,432,353	119,934	153,328	17.503
2000	77	1,360	5,199,309	118,324	162,439	18.543
2001	188	1,548	13,419,842	163,842	193,241	22.060
2002	44	1,592	—	244,898	204,017	23.290
Site-based & Custom Incentive Services:						
1991	3	3	246,156	475,775	1,427	0.163
1992	35	38	2,586,477	185,687	7,926	0.905
1993	58	96	11,215,581	337,562	27,505	3.140
1994	48	144	9,077,942	383,975	45,936	5.244
1995	26	170	3,207,688	348,216	54,989	6.277
1996	26	196	4,039,782	387,923	65,075	7.429
1997	10	206	2,886,602	287,418	67,950	7.757
1998	22	228	3,402,245	673,744	82,772	9.449
1999	25	253	12,670,083	152,571	86,586	9.884
2000	23	276	10,010,663	607,028	100,548	11.478
2001	70	346	10,164,850	214,229	115,544	13.190
2002	33	379	—	316,556	125,990	14.382
Tailored Agreement Services:						
1994	0	0	—	—	0	0.000
1995	0	0	—	—	1,747	0.199
1996	0	0	—	—	8,704	0.994
1997	0	0	—	—	13,230	1.510
1998	0	0	—	—	33,765	3.854
1999	1	1	—	—	48,111	5.492
2000	3	4	—	—	56,143	6.409
2001	1	5	—	—	56,583	6.459
2002	1	6	—	—	58,480	6.676

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART DESIGN PROGRAM
— Completed Projects —

(Continued)

Year	*Projects by Year* (2)	*Cumulative Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (4)	*Avg. MW Load Reduction in Year*
Facility Assessments:						
1998	48	48	—	22,343	1,072	0.122
1999	58	106	—	22,343	2,368	0.270
2000	21	127	—	22,343	2,838	0.324
2001	20	147	—	22,343	3,284	0.375
2002	11	158	—	22,343	3,530	0.403
Total Program (all service types):						
1989	2	2	538,565	—	0	0.000
1990	7	9	934,305	—	0	0.000
1991	107	116	8,690,951	—	8,966	1.024
1992	299	415	33,362,265	—	29,841	3.406
1993	249	664	29,808,700	—	64,932	7.412
1994	239	903	38,017,136	—	110,476	12.611
1995	213	1,116	15,645,553	—	145,209	16.576
1996	166	1,282	17,736,800	—	184,558	21.068
1997	160	1,442	16,493,118	—	207,004	23.631
1998	187	1,629	13,248,817	—	258,953	29.561
1999	196	1,825	28,960,312	—	291,122	33.233
2000	132	1,957	16,757,964	—	322,696	36.837
2001	287	2,244	26,296,034	—	369,382	42.167
2002	96	2,340	—	—	392,746	44.834
Electricity Savings Since Start of Program:					**2,385,885**	**MWh**

Program Expenditure

Administrative expenditures and participant payments for partial or completed projects totaled $89,953,593 from 1988 through 2002. During 2002, total expenditures were $3,480,493. The incentive payments for the sixth (final) completed projects under Tailored Agreements are included in this total. The sum of Tailored Agreement incentive payments made to date (1995-2002) is $8,400,496. The energy savings for these projects are also included in the table of energy savings from completed projects.

ENERGY SMART DESIGN PROGRAM

Expenditures for serving commercial Facility Assessment participants in 1997-2001, totaling $633,276, are included in administrative expenditures for these years. FA expenses for *industrial* customers were charged to the Energy $avings Plan Program budget; for more information, see the *E$P* entry in this report. Beginning in 2002, FA costs for both commercial and industrial facilities are included in administrative costs of the *Energy Smart Services Program*.

PROGRAM EXPENDITURES FOR THE ENERGY SMART DESIGN PROGRAM (5)

Year	Project Type	Admini-stration	Incentive Payments to Participants			Total Expenditures
			Contracted Projects (6)	All Payments for Projects Completed in Year (6)	Actual Expenditures in Year	
1988	Design Assistance	$19,137	$0	$0	$0	$19,137
1989	Design Assistance	59,383	196,416	8,151	11,901	71,284
1990	Design Assistance	190,125	391,046	107,427	107,427	297,552
1991	Design Assistance		593,374	137,640	446,610	
	Rebate Option		3,529,296	899,188	1,048,433	
	Site-based Incentive		1,570,085	199,082	199,082	
	Annual Total	565,117	5,692,755	1,235,910	1,694,125	2,259,242
1992	Design Assistance		722,374	847,017	815,861	
	Rebate Option		3,747,262	2,413,798	2,405,961	
	Site-based Incentive		3,315,810	1,076,187	1,157,085	
	Annual Total	881,306	7,785,446	4,337,002	4,378,907	5,260,213
1993	Design Assistance		365,122	322,184	392,234	
	Rebate Option		5,475,110	3,594,700	4,117,013	
	Incentives		6,884,695	3,082,402	3,901,856	
	Annual Total	1,333,423	12,724,927	6,999,286	8,411,103	9,744,526
1994	Tailored Agreement		3,200,000	—	—	
	Commissioning Svcs		—	2,823	2,823	
	Design Documents		—	9,978	9,978	
	Design Assistance		86,888	382,040	312,040	
	Rebate Option		0	2,992,350	4,019,837	
	Incentives		5,317,646	4,881,208	4,121,307	
	Annual Total	1,306,628	8,604,534	8,268,399	8,465,985	9,772,613
1995	Tailored Agreement		1,800,000	—	232,866	
	Commissioning Svcs		—	0	0	
	Design Documents		—	0	0	
	Design Assistance		86,017	97,462	97,462	
	Rebate Option		0	717,927	650,047	
	Incentives		5,448,189	3,992,040	4,683,268	
	Annual Total	2,206,759	7,334,206	4,807,429	5,663,643	7,870,402

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

PROGRAM EXPENDITURES FOR THE ENERGY SMART DESIGN PROGRAM (5)

(Continued)

Year	Project Type	Administration	Incentive Payments to Participants			Total Expenditures
			Contracted Projects (6)	All Payments for Projects Completed in Year (6)	Actual Expenditures in Year	
1996	Tailored Agreement		4,512,369	—	906,710	
	Commissioning Svcs		47,462	0	0	
	Design Documents		19,664	0	0	
	Design Assistance		38,150	64,355	64,355	
	Rebate Option		0	8,164	8,164	
	Incentives		3,279,652	4,909,735	5,281,367	
	Annual Total	1,950,773	7,897,297	4,982,254	6,260,596	8,211,369
1997	Tailored Agreement		250,000	—	580,351	
	Commissioning Svcs		3,925	47,462	47,462	
	Design Documents		0	6,050	6,050	
	Design Assistance		45,521	48,080	48,080	
	Rebate Option		0	0	0	
	Incentives		4,415,100	2,409,089	2,682,581	
	Facilty Assmt Svcs	40,330	—	—	—	
	Other Program Svcs	1,943,722	—	—	—	
	Annual Total	1,984,052	4,714,546	2,510,681	3,364,524	5,348,576
1998	Tailored Agreement		100,222	—	2,825,007	
	Commissioning Svcs		67,055	0	0	
	Design Documents		0	0	0	
	Design Assistance		94,417	61,475	61,475	
	Rebate Option		0	359,021	215,201	
	Incentives		4,923,747	3,872,422	4,838,649	
	Facilty Assmt Svcs	145,394	—	—	—	
	Other Program Svcs	1,825,731	—	—	—	
	Annual Total	1,971,125	5,185,441	4,292,918	7,940,332	9,911,457
1999	Tailored Agreement		1,250,000	794,828	1,906,053	
	Commissioning Svcs		0	0	0	
	Design Documents		0	0	0	
	Design Assistance		88,830	40,731	50,671	
	Rebate Option		0	0	0	
	Incentives		2,919,653	2,932,277	4,157,368	
	Facilty Assmt Svcs	137,197	—	—	—	
	Other Program Svcs	2,077,268	—	—	—	
	Annual Total	2,214,465	4,258,483	3,767,836	6,114,092	8,328,557

(Cont'd.)

ENERGY SMART DESIGN PROGRAM

PROGRAM EXPENDITURES FOR THE ENERGY SMART DESIGN PROGRAM (5)

(Continued)

Year	Project Type	Administration	Incentive Payments to Participants			Total Expenditures
			Contracted Projects (6)	All Payments for Projects Completed in Year (6)	Actual Expenditures in Year	
2000	Tailored Agreement		80,103	6,674,616	1,479,492	
	Commissioning Svcs		0	13,925	6,925	
	Design Documents		0	0	0	
	Design Assistance		107,208	88,179	85,164	
	Rebate Option		0	0	0	
	Incentives		4,043,068	4,331,168	3,711,020	
	Facilty Assmt Svcs	187,186	—	—	—	
	Other Program Svcs	2,133,295	—	—	—	
	Annual Total	2,320,481	4,230,379	11,107,888	5,282,601	7,603,082
2001	Tailored Agreement		0	615,880	154,844	
	Commissioning Svcs		0	20,000	20,000	
	Design Documents		0	13,364	13,364	
	Design Assistance		89,485	43,587	43,587	
	Rebate Option		0	0	0	
	Incentives		11,311,370	8,252,577	8,667,337	
	Facilty Assmt Svcs	123,169	—	—	—	
	Other Program Svcs	2,752,789	—	—	—	
	Annual Total	2,875,958	11,400,855	8,945,408	8,899,132	11,775,090
2002	Tailored Agreement		0	315,173	315,173	
	Commissioning Svcs		0	0	0	
	Design Documents		0	0	0	
	Design Assistance		0	95,813	95,813	
	Rebate Option		0	0	0	
	Incentives		3,654	3,397,383	2,961,868	
	Facilty Assmt Svcs		—	—	—	
	Other Program Svcs		—	—	—	
	Annual Total	107,639	3,654	3,808,369	3,372,854	3,480,493
TOTAL PROGRAM		**$19,986,371**	**$80,419,985**	**$65,178,958**	**$69,967,222**	**$89,953,593**

Partial funding of the incentive and administrative costs for *ESD* projects began in 1989 through a contract between City Light and the Bonneville Power Administration; later contracts, the Third Party Financing and Flexibility Agreements, took over in 1994. BPA funding was available for all projects contracted through December 31, 1996 and completed by September 30, 1999. The last BPA reimbursement was received in 1999 for $1,479,310. BPA funding for the program from 1989 through 1999 has totaled $43,753,861.

ENERGY SMART DESIGN PROGRAM

BPA FUNDING/REIMBURSEMENT FOR THE ENERGY SMART DESIGN PROGRAM (7)

Year	*Administration*	*Measures*	*Total Funding*
1988	$0	$0	$0
1989	0	34,500	34,500
1990	0	131,328	131,328
1991	0	1,453,405	1,453,405
1992	86,700	3,341,317	3,428,017
1993	1,085,163	7,790,032	8,875,195
1994	736,800	8,300,139	9,036,939
1995	588,464	6,613,122	7,201,586
1996	0	6,429,763	6,429,763
1997	0	3,178,134	3,178,134
1998	0	2,505,684	2,505,684
1999	0	1,479,310	1,479,310
2000-2002	0	0	0
Total	**$2,497,127**	**$41,256,733**	**$43,753,861**

Notes

1. The eligible population figures are from the *Seattle City Light 2001 Annual Report*.

2. Data on the number of completed and contract-executed projects were obtained from the Commercial–Industrial Tracking System (CITS) database, maintained by the Commercial–Industrial Section. In 1995 through 2002, various stages of partial completion were reached on the multi-year Tailored Agreement contracts. In the year when all projects under a Tailored Agreement contract reached final completion, the project was counted toward cumulative projects.

   Tailored Agreement customers included the City of Seattle, King County, Seattle Public School District Number 1, and the University of Washington. The Tailored Agreements with Seattle Public Schools were completed in 2000, resulting in 16,301 MWh of annual energy savings and 2.0 aMW of load reduction. By the close of 2000, the District had completed all lighting and fan control retrofits to 88 existing school buildings targeted by the program. Total incentives paid by City Light to the District were nearly $2.2 million. In addition, the Tailored Agreements provided financial support for the District's Resource Conservation Manager position through April 1999, saving 444,950 therms of natural gas and 139 million gallons of water annually, in addition to electrical conservation. This success prompted the District to pick up the Manager salary when City Light's funding expired. The Conservation Manager helped develop behavioral changes and Operation and Maintenance (O&M) changes in participating schools.

   In 1995 the City of Seattle resolved by ordinance to take a committed approach to improve energy efficiency in municipal facilities for each department. City Light provided administrative staffing and technical expertise to the Municipal Resource Conservation Pilot Project (MRCPP). The municipal project provided resource efficiency upgrades to many City facilities from 1996 through 1999. City Light funding was provided through a Tailored Agreement with the City's Office of Environmental Management, now known as the Office of Sustainability and

ENERGY SMART DESIGN PROGRAM

Environment. The agreement invested $795,000 in energy efficiency improvements for City facilities that save about 3,704 MWh annually, resulting in 0.4 aMW of load reduction and producing about $240,000 in bill savings each year.

The ESD program continues to pursue other individual City of Seattle projects beyond the term of the completed Tailored Agreement. Design assistance and incentive dollars have been provided for the four municipal facilities currently under construction: a new City Hall, Justice Center, downtown Public Library, and McCaw Performance Hall at the Seattle Center. Several other city-owned facilities participating in the Leadership in Efficiency and Environmental Design (LEED™) program are receiving City Light design assistance and incentives.

Apart from the Tailored Agreement with the City of Seattle, the City also began a program to install red and green light-emitting diode (LED) traffic signals in 1998. Completed in 2002, this Seattle Department of Transportation project provides an estimated 6,272 MWh of annual energy savings. *ESD* also funded LED traffic signal retrofit projects in the cities of Burien and Tukwila, and for the Washington Department of Transportation. These additional LED retrofit projects provide another 972 MWh of annual savings to City Light's service area. The savings for these projects are included in the contracted and completed *ESD* project savings tables.

3. The total MWh savings reported by year reflect savings for the current year participants plus savings in that year from all prior participants.

4. First year energy savings from total *ESD* program participants completing work in each year were: 8,966 MWh (1991); 20,875 MWh (1992); 35,091 MWh (1993); 45,544 MWh (1994); 34,733 MWh (1995); 39,350 MWh (1996); 22,446 MWh (1997); 51,949 MWh (1998); 32,168 MWh (1999); 31,574 MWh (2000); 46,686 MWh (2001); and 23,364 MWh (2002).

   At the end of 2002 the cumulative energy savings for measures installed at Tailored Agreement (TA) facilities were 58,480 MWh, contributing 6.676 aMW of load reduction. The affected areas associated with these four TA customers are 9,932,000 square feet at the University of Washington, 7,139,000 square feet in Seattle School District facilities, 889,000 square feet in King County facilities, and 703,000 square feet in City of Seattle municipal buildings. By the end of 2002, six TA contracts were completed with these four major customers (including two contracts each with Seattle School District and the City of Seattle).

   Electrical energy savings for Facility Assessment Audit projects cover those FA-recommended actions financed by customers on their own. Energy savings financed through the *ESD* and *E$P* programs are listed under the relevant program components (e.g., Custom Incentive). A recent evaluation of the Operations and Resource Assessment Service (May 2000) revealed that customer-financed savings average 22,343 kWh annually per project. This estimate has been adjusted using the same realization rate used for *ESD* existing buildings (0.95). Energy savings for FA projects that eventually receive incentives through the *ESD* or *E$P* programs are listed under the relevant program components (e.g., Custom or Standard Incentive).

   In addition to these first year savings from *ESD*-completed projects, a small portion of Energy Smart Design (*ESD*) program savings result from energy conservation measures installed in industrial facilities. These *ESD*-funded measures are largely for lighting, HVAC equipment, and other measures not directly related to industrial processes. The 50,249 MWh of 1991-2002 *ESD* program savings in industrial facilities were extracted from the C-I Tracking System database. These savings have been adjusted to

ENERGY SMART DESIGN PROGRAM

reflect the realization rate for *ESD* projects in new construction (realization factor = 0.49) and in existing buildings (realization factor = 0.95). First year energy savings for *ESD* industrial customers, included above, were by year: 111 MWh (1991); 717 MWh (1992); 3,379 MWh (1993); 959 MWh (1994); 2,541 MWh (1995); 857 MWh (1996); 1,681 MWh (1997); 3,691 MWh (1998); 3,292 MWh (1999); 12,502 MWh (2000); 14,392 MWh (2001); and 6,127 MWh (2002).

5. Information on 1988-1990 costs for administration (e.g., wages, travel) and payments to program participants (e.g., for computer modeling of energy conservation measures) were obtained from monthly Cost Ledger Reports for Work Order No. 70557. For 1991 through 2002, administrative costs were gathered from the Seattle Financial Management System and Summit System for Activity/Work Order Nos. 70557 and 70588.

   Administrative costs for 1993-2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours. In 1993 the A&G overhead charge for the *ESD* Program was $369,022, or 28% of total programmatic administrative expenditures. In 1994 the A&G overhead charge was $570,632 (44%), while in 1995 the A&G overhead charge was $513,459 (22%).

   Information on annual incentive payments to participants was obtained from financial records in the Commercial–Industrial Section, Energy Management Services Division. Actual incentive payments in the year were confirmed by Seattle Financial Management System reports.

6. Incentive payments for <u>contracted</u> projects represent the projected cost of payments for participating projects under contract with Seattle City Light. Beginning in 2002, new contracted commercial and industrial incentive and non-incentive projects are funded by the Energy Smart Services (*ESS*) program. As a result of this program conversion, *ESD* contracted expenditures during 2002 were minimal (3,654). Although this amount would normally have been associated with the *ESS* program, the dollars are associated with a few projects assigned under *ESD* during 2001 but not contracted until early 2002.

   The costs identified as "all payments for projects completed in year" represent all customer incentives for projects completing installation during the year. These incentives were paid over the life of the project, and include any partial payments actually made in a prior year. The amounts of these project-life incentive payments to customers were obtained from financial records in the Commercial–Industrial Section, Energy Management Services Division. The "actual expenditures in year" represent monies spent in the calendar year for projects receiving partial or full incentives during the year; some of these projects may have received an earlier partial payment, or be scheduled to receive another partial payment in a future year. Total expenditures are reported here as the sum of administration costs plus actual incentive payments in the year.

7. The Bonneville Power Administration reimbursements to Seattle City Light for administration and payments to program participants were taken from Commercial–Industrial Section records of amounts invoiced to the BPA.

ENERGY SMART SERVICES PROGRAM

Description

In 2002 a new entity, Energy Smart Services, replaced the former Energy $avings Plan (*E$P*) and Energy Smart Design (*ESD*) programs. The new program continues to serve customers with commercial new construction, existing commercial building retrofits, and industrial facilities. The *E$P* program was discontinued in 2002, with the completion of the last remaining open contracts. Eleven projects originally contracted under *ESD* remain open at the end of 2002, but are expected to reach completion during 2003-2004. This Energy Smart Services (*ESS*) program entry reflects commercial and industrial projects contracted during 2002, some of which were also completed during the year.

ESS Incentive services offer funding to commercial and industrial customers as simple rebates for exit signs and occupancy sensors, or as standard incentives for lighting and HVAC equipment and motors. The customer also has the option of custom incentives to fund new efficiency technologies, as well as upgrades to equipment unique to industrial and commercial settings.

Incentive funding levels for simple rebates are set at $20 (retrofit) or $30 (new) per exit sign. Simple rebates for retrofits of wall mounted occupancy sensors are $30 per unit or $90 per unit for ceiling mounted sensors. Standard incentives range from 13 to 14 cents/kWh of first-year energy savings for new lighting fixtures. Standard incentives for retrofit lighting are set at 10 cents/kWh. Controls for HVAC, lighting and daylighting are funded at 17 to 21 cents/kWh of saved energy. HVAC equipment (other than HVAC controls) range from 20 cents/kWh for air-to-air heat pumps to 29 cents/kWh for chillers.

Custom incentive funding levels range from 1 cent/kWh of saved energy to 15 cents/kWh for industrial process equipment, depending on the expected measure life. The custom incentives for non-process equipment (lighting, HVAC, and refrigeration) are set at 2 cents/kWh of saved energy for equipment with a one-year measure life to a high of 37 cents/kWh for equipment with a 30 year estimated measure life. The custom incentive cost cap, or maximum limit of City Light's funding, is set at the incremental cost, up to 70% of the total measure cost. The incremental cost is equal to the cost of the higher efficiency equipment minus to cost of baseline, less efficient equipment.

ESS also offers a set of technical assistance services, including Facility Assessments, Energy Analysis Assistance, and Building Commissioning Assistance. The Facility Assessment (FA)

ENERGY SMART SERVICES PROGRAM

audit, is offered to commercial and industrial customers. The no-cost service is designed to help customers manage their operating costs in existing facilities and identify specific action items that can reduce both energy and non-energy (e.g., water) usage. Services provided to customers through the program include a resource-use audit at the customer's facility, a report which includes recommended actions for reducing the use of electricity, water, and other resources at the facility, and a joint City Light–customer action plan for implementing report recommendations. The FA service is also designed as a way for customers to be referred to other City Light services that could help them.

Operations and maintenance (O&M) services are repairs, replacements, and adjustments of existing or new equipment to maximize their efficiency and ensure continued savings over the life of the measures. *ESS* integrates O&M recommendations as part of their Facility Assessment service. A second channel for *ESS* O&M services can be made through their inclusion in the Incentive services contract between City Light and the customer. The scope of work specified under the City Light funding contract includes the conservation measures being funded and a list of any O&M actions needed to ensure those funded systems are operating properly. City Light payment is made after the measures and O&M actions have been completed.

Energy Analysis Assistance (formerly Design Assistance under *ESD*) provides customers with in-depth analysis of proposed electrical energy conservation measures not covered by standard incentives. Energy Analysis Assistance is offered for measures that show potential electrical energy savings and require detailed engineering analysis in order to realize the savings. The list of measures covered by an Energy Analysis Assistance contract is agreed upon in advance by the customer, the consultant, and the City Light Energy Management Analyst. City Light pays 100% of the cost of the consultant analysis contract for new construction applications. For Energy Analysis Assistance in existing facilities, City Light offers the customer a contract paying for half the cost of the engineering analysis. Payment is made upon review and approval of the final analysis report by City Light. Reimbursement for the second half of the Energy Analysis is provided if the customer installs all recommended measures in the analysis report having paybacks less than 2.5 years within 18 months of the payment for the first half of the Energy Analysis Assistance contract.

Building commissioning is a process to ensure that the energy systems within a facility perform in accordance with the design intent, contract requirements, and owner operational needs. The *ESS* program provides financial and technical support for the building commissioning process in new construction, and major remodel projects with construction budgets over $5 million. Building commissioning and related funds support development of a commissioning plan early in the building development process, and assessment of energy impacts from commissioning activities.

ENERGY SMART SERVICES PROGRAM

Plug Load services cover those devices in a building that are not hard-wired to the electrical system, but are plugged into electrical outlets (i.e., copiers, computers, fax machines, vending machines, etc.) *ESS* Plug Load services assist customers by dispensing information to promote the efficient use of office equipment through purchasing and management strategies, control devices, and behavioral changes. Such advice can range from simply turning off equipment when it is not being used, buying Energy Star® equipment, engaging the "sleep" mode of personal computers and copiers, installing equipment controllers to automatically turn off equipment not being used, to the installation of VendingMiser™ on soft drink vending machines (a a device that reduces energy usage by 35-40%). In 2001-2002 the *ESS* program offered free installation of VendingMisers for all qualifying cold drink machines through a contracted installer, with plans to install up to 5,000 units over several years. Half this number (2,226) were installed during the first two years. The Bonneville Power Administration picked up the cost of these installations by merging them into the program being operated independently by the BPA, and the contractor reimbursed City Light for equipment purchased in 2001-2002. Since February 2003, when the BPA program ceased, City Light has provided participating customers with an $80 rebate toward the cost of each Vending Miser installed.

Eligible Population:

The *ESS* program focuses on new and existing commercial, institutional, and government buildings; the program also serves non-process end uses in industrial facilities. In 2002, Seattle City Light had 1,776 government and 30,934 commercial accounts (of which about 16% qualify for *ESS* services, the remainder being small commercial accounts). The program also serves business facilities where there is manufacturing, processing, or refining activity. In 2002, City Light had 259 industrial customers. (1)

Lifetime of Conservation Measures Installed

The lifetimes of industrial process measures vary, with an estimated average lifetime of 16 years. The lifetime of measures for commercial new construction and commercial retrofit projects ranges from 5 to 35 years, depending on the type of measure; the average lifetime is 15 years. (2)

ENERGY SMART SERVICES PROGRAM

Electricity Savings

This section contains two tables. The first depicts projects contracted by City Light during the calendar year. This table shows the potential energy savings that will be realized when the projects are completed. Commercial projects may take up to three years to move from contract to completion. The second table presents savings realized from projects completed during the calendar year.

Note that the energy savings (both MWh and aMW) reported in both tables reflect savings from current year participants as well as savings in that year from all prior participants for whom the measure lifetime has not yet expired. Because the *ESS* program began in 2002, taking over from *ESD* and *E$P*, the 2002 first-year and cumulative savings are the same. For a description of first-year savings from current year participants only, see the referenced footnotes. The line titled "electricity savings since start of program" sums savings across all the years from program inception through the current reporting year. This illustrative construct exceeds the actual savings experienced in any given calendar year.

The following tables document savings from all *ESS* projects. In 2002 the energy savings from all completed projects, including financed and facility assessment projects, were 16,049 megawatt-hours (MWh). The load reduction in 2002 due to this program was 1.832 average megawatts (aMW). Following are more details about financed projects, facility assessments, plug load services, and non-incentive projects.

Financed Projects: Energy savings are presented for the192 financed projects contracted in 2002. Based on an evaluation of the *ESS* program, savings projected by engineering calculations were reduced by 5% for commercial retrofit projects and 51% for commercial new construction projects. Energy savings for industrial process projects are estimated at 100% of tracking system values, because these savings are typically verified through post-installation metering. Energy savings for non-process end-uses in industrial facilities are reduced by 5%, as in the case of commercial retrofit projects; virtually all industrial projects occur in existing facilities. Savings for *ESS* financed projects contracted during 2002 totaled 25,471 megawatt-hours (MWh), or 2.908 average megawatts (aMW). Many of the contracted projects will be completed in 2003-2004.

Energy savings are estimated for the 98 financed projects completed in 2002. Projects and their associated energy savings are not counted as completed until the year in which the participating customer receives their final incentive payment. As with contracted projects, the projected savings were reduced by 5% for commercial industrial non-process retrofit projects, and by 51% for commercial new construction projects. Energy savings for *ESS* financed projects completed during 2002 were 11,078 MWh, or 1.265 aMW.

ENERGY SMART SERVICES PROGRAM

Facility Assessment Audit: During 2002, Facility Assessment (FA) reports and action plans were contracted and completed in the *ESS* program for four *commercial* customers. These audits identified potential electricity savings of 803 MWh, an average of 201 MWh per site. (An additional 11 FA projects were completed during 2002 under the *ESD* program.)

Realization of these savings is dependent on the customers arranging appropriate financing and installing the conservation measures in the facilities. This financing can be done by the customers themselves or through the *ESS* program offered by Seattle City Light. When the customers themselves finance these actions, the savings are presented in the completed savings table under the *Facility Assessment* category.

In 2002 an estimated 89 MWh of savings were financed by commercial FA customers (but none by industrial customers). Savings financed by City Light through the *ESS* program are presented in the table under the relevant program incentive component (*Commercial Retrofit* or *Industrial*).

Plug Load Services: Vending Miser™ is a device that reduces energy usage in soft drink vending machines by 35-40%. City Light contracted with a firm to install up to 5,000 Vending Misers over several years. By the end of 2001, a total of 531 units had been installed in the Seattle City Light service area, acquiring an estimated 640 MWh of annual energy savings. During 2002, another 2,223 units were installed in the Seattle City Light service area, acquiring an additional 2,681 MWh of annual energy savings.

Non-incentive Projects: Electrical energy savings are also achieved by customers who receive facility assessments or technical assistance from City Light, and then install conservation measures at their own expense in their facilities. These measures consist of both equipment replacement, and operation and maintenance actions.

During 2002, *commercial* customers took non-incentive conservation actions that were estimated to have annual energy savings of 560 MWh. About 22% of these savings result from equipment replacements, with the remaining 78% being operation and maintenance actions. Meanwhile, *industrial* customers took non-incentive conservation actions that were estimated to have annual energy savings of 559 MWh. All these industrial non-incentive savings result from operation and maintenance actions.

These savings are not included in the following *ESS* savings tables. For a summary of non-incentive energy savings, see *Table 12: Seattle City Light Conservation Plan Accomplishments*, in SECTION I: SUMMARY OF ACCOMPLISHMENTS AND EXPENDITURES.

ENERGY SMART SERVICES PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART SERVICES PROGRAM
— Contracted Projects —

Year	*Contracted Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
Commercial New Construction:						
2002	Energy Analysis	3	3	—	—	0.000
	Incentives	18	18	161,088	2,900	0.331
	Building Commissioning	3	3	—	—	0.000
Potential Electricity Savings Since Start of Program:					2,900	MWh
Commercial Retrofit:						
2001	Plug Loads	531	531	1,206	640	0.073
2002	Facility Assessment	4	4	22,343	89	0.010
	Energy Analysis	2	2	—	—	0.000
	Incentives	169	169	114,376	19,330	2.207
	Building Commissioning	1	1	—	—	0.000
	Plug Loads	2,223	2,754	1,206	3,321	0.379
Potential Electricity Savings Since Start of Program:					23,381	MWh
Industrial:						
2002	Facility Assessment	0	0	—	—	0.000
	Energy Analysis	0	0	—	—	0.000
	Incentives	23	23	266,991	6,141	0.701
Potential Electricity Savings Since Start of Program:					6,141	MWh
Total Program:						
2001	All Types	531	531	1,206	640	0.073
2002	All Types	2,446	2,977	10,675	31,781	3.628
Potential Electricity Savings Since Start of Program:					**32,421**	**MWh**

ENERGY SMART SERVICES PROGRAM

ELECTRICITY SAVINGS FOR THE ENERGY SMART SERVICES PROGRAM
— Completed Projects —

Year	*Contracted Project Type*	*Projects by Year* (4)	*Cumulative Projects*	*kWh Savings Per Project*	*MWh Savings in Year* (5)	*Avg. MW Load Reduction in Year*
Commercial New Construction:						
2002	Energy Analysis	0	0	—	—	0.000
	Incentives	11	11	141,890	1,561	0.178
	Building Commissioning	1	1	—	—	0.000
Electricity Savings Since Start of Program:					1,561	MWh
Commercial Retrofit:						
2001	Plug Loads	531	531	1,206	640	0.073
2002	Facility Assessment	4	4	22,343	89	0.010
	Energy Analysis	0	0	—	—	0.000
	Incentives	87	87	99,270	8,636	0.986
	Building Commissioning	0	0	—	—	0.000
	Plug Loads	2,223	2,754	1,206	3,321	0.379
Electricity Savings Since Start of Program:					12,688	MWh
Industrial:						
2002	Facility Assessment	0	0	—	—	0.000
	Energy Analysis	0	0	—	—	0.000
	Incentives	11	11	221,954	2,441	0.279
Electricity Savings Since Start of Program:					2,441	MWh
Total Program:						
2001	All Types	531	531	1,206	640	0.073
2002	All Types	2,337	2,868	5,596	16,049	1.832
Electricity Savings Since Start of Program:					**16,690**	**MWh**

ENERGY SMART SERVICES PROGRAM

Program Expenditure

Administrative expenditures and participant payments for partial or completed projects totaled $2,935,717 in 2002, while the total expenditures were $4,881,991. Incentive payments encumbered by customer contracts were $3,055,079 in 2002. Expenditures for serving Facility Assessment participants in 2002 are reported under the administrative expenditures.

PROGRAM EXPENDITURES FOR THE ENERGY SMART SERVICES PROGRAM (5)

Year	*Project Type*	*Administration*	*Incentive Payments to Participants*			*Total Expenditures*
			Contracted Projects (6)	*All Payments for Projects Completed in Year* (6)	*Actual Expenditures in Year*	
2002	Commercial New	$237,693	$1,259,819	$598,663	$628,496	$866,189
	Commercial Retrofit	1,048,805	3,088,431	1,057,240	1,066,085	2,114,890
	Industrial	385,152	852,894	363,041	220,223	605,375
	General Administration	1,295,538	0	0	0	1,295,538
	Annual Total	2,967,188	5,201,144	2,018,944	1,914,804	4,881,991
TOTAL PROGRAM		**$2,967,188**	**$5,201,144**	**$2,018,944**	**$1,914,804**	**$4,881,991**

Notes

1. The eligible population figures are from the *Seattle City Light 2001 Annual Report*.

2. Data on the number of completed and contract-executed projects were obtained from the Commercial–Industrial Tracking System (CITS) database, maintained by the Commercial–Industrial Section.

2. There is considerable variability in the lifetime of the conservation measures installed by participants in *ESS*. For example, the lifetime for energy efficient fluorescent lamps is short, averaging nine years; while the lifetime of a parabolic fixture can range from nine to as many as forty years. Variable speed DC motors can perform within a range of twelve to twenty-five years. (See "Use of Commercial Energy Efficiency Measure Service Life Estimates In Program and Resource Planning", in Proceedings of the 1988 ACEEE Summer Study on Energy Efficiency in Buildings, vol. 3, pp. 3.84-3.96.) The 16 year conservation measures lifetime presented in this report is an average of the lifetimes for different measures.

3. The total MWh savings reported by year reflect savings for the current year participants plus savings in that year from all prior participants.

   Energy audits are advisory and therefore do not result in energy savings, unless the customer decides to follow-up on the audit by completing an incentive project.

ENERGY SMART SERVICES PROGRAM

4. First year energy savings from commercial participants completing work in each year were: 640 MWh (2001); and 12,967 MWh (2002). First year energy savings from industrial participants completing work in each year were: 2,441 MWh (2002).

   The source of non-incentive savings data is the "non-incentive table" of the Commercial / Industrial Tracking System (CITS).

4. Data on the number of contracted and completed projects by year were obtained from the Commercial/ Industrial Tracking System (CITS).

   Electrical energy savings for Facility Assessment audit projects cover those FA-recommended actions financed by customers on their own. Energy savings for FA projects that eventually receive incentives through the *ESS* program are listed under the relevant program components (e.g., Commercial Retrofit Incentives). An evaluation of the Operations and Resource Assessment Service (May 2000) revealed that customer-financed savings average 22,343 kWh annually per project. This estimate has been adjusted using the same realization rate used for *ESS* existing buildings (0.95).

5. Information on 2001-2002 costs for administration were gathered from the Seattle Financial Management System and Summit System for Activity/Work Order Nos. 70571-01, -02, -05, -06, -07, and -85. Administrative costs for 2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours.

   Information on annual incentive payments to participants was obtained from financial records in the Commercial–Industrial Section, Energy Management Services Division. Actual incentive payments in the year were confirmed by Seattle Financial Management System reports. Labor for Plug Load services was charged to *ESD* Activity/Work Order Nos. 70588-05 (2001); and 70571-01, -06 (2002). Plug Load incentives were paid by the BPA in both years.

7. Incentive payments for contracted projects represent the projected cost of payments for participating projects under contract with Seattle City Light. The costs identified as "all payments for projects completed in year" represent all customer incentives for projects completing installation during the year. These incentives were paid over the life of the project, and include any partial payments actually made in a prior year. The amounts of these project-life incentive payments to customers were obtained from financial records in the Commercial–Industrial Section, Energy Management Services Division. The "actual expenditures in year" represent monies spent in the calendar year for projects receiving partial or full incentives during the year; some of these projects may have received an earlier partial payment, or be scheduled to receive another partial payment in a future year. Total expenditures are reported here as the sum of administration costs plus actual incentive payments in the year.

LIGHTING DESIGN LAB PROGRAM

Description

Under development since 1987, the Lighting Design Lab (*LDL*) opened in December 1989, operated by Seattle City Light. Through 1997, the *LDL* was sponsored jointly with the Utility by the Bonneville Power Administration (BPA) and many other contributors. These included the Natural Resources Defense Council, Puget Sound Power and Light Company, Snohomish Public Utilities District No. 1, Tacoma City Light, the University of Washington, Pacific Power, the California Energy Commission, the Northwest Conservation Act Coalition, the Washington State Energy Office, the Northwest Power Planning Council, B.C. Hydro, Idaho Power, Washington Water Power, and the U.S. Department of Energy.

Effective January 1998, the Northwest Energy Efficiency Alliance (NEEA) replaced the BPA as the primary regional funding source for the Lighting Design Lab; the current NEEA contract will expire on December 31, 2003. During 2001, NEEA supplied 66% of total *LDL* funding, and 73% in 2002. Between 1989 and 1997, about 57% of funding each year was supplied by the BPA. Besides Seattle City Light and NEEA/BPA, current *LDL* sponsors include Puget Sound Energy, Snohomish County Public Utility District (PUD), Tacoma Public Utilities, the State of Alaska, and British Columbia Hydro (Canada).

The overall *LDL* mission from the start has been to bring about a long-term change in the regional lighting marketplace. The objectives of the Lighting Design Lab are to:

- Promote state-of-the-art daylighting, electric lighting systems, and design approaches, in both the new construction and retrofit markets;
- Provide energy-efficient lighting options to a wide variety of lighting professionals in the commercial sector;
- Conduct tours, consultations, classes, demonstrations, mock-ups, and other educational activities on state-of-the-art energy-efficient lighting strategies and design; and
- Promote implementation of energy-efficient lighting strategies and design.

A mock-up facility allows testing of various lighting strategies in a variety of settings. A daylight modeling lab and computer modeling facilities are used in design projects to maximize daylighting designs.

LIGHTING DESIGN LAB PROGRAM

As a consequence of the NEEA contract, there is more emphasis on increasing regional outreach and penetration in less populated parts of the region. The expanded objectives of the *LDL* (in the terms of the NEEA contract) are to:

- Support regional market transformation activities through education, information, and demonstration;
- Increase clients served outside the Puget Sound area;
- Increase lighting specifier group contacts on the *LDL* mailing list;
- Collaborate with other regional marketing campaigns in support of regional utilities; and
- Promote visits to the Lighting Design Lab by first-time users around the region, including designers and specifiers.

Eligible Population

The Lighting Design Lab is directed toward architects, engineers, lighting designers, utility analysts, facility managers, and contractors in the Washington, Oregon, Idaho, Montana and British Columbia.

Lifetime of Conservation Measures Installed: Not applicable

Electricity Savings

The Lighting Design Lab's central purpose is to provide lighting specifiers with technical assistance and demonstrations of energy efficient lighting and daylighting strategies. It is a regional service for utility programs. From 1991-2003 a series of process evaluations and satisfaction studies have been conducted for the *LDL*. (1)

Attempting to estimate energy savings resulting solely from the Lab's consultations and other services is not feasible due to the informational and educational emphasis of the Lab, inaccessible billing data from utilities outside of the City Light service area, the lack of on-site inspections to verify the installation of lighting measures recommended by *LDL* consultants, and the difficulty of separating *LDL* energy-savings impacts from the effect of lighting measures and rebates recommended by utility program staff. (2) The *LDL* has measured service impacts, however, and found significant market transformation effects. (3)

LIGHTING DESIGN LAB PROGRAM

PARTICIPATION IN THE LIGHTING DESIGN LAB PROGRAM (4)

Year	Consul-tation Events	Mock-up Events	Class Attendees	Meeting Attendees	Tour Attendees	Walk-ins & Library Users	Other Users	Total
1989	35	1	320	358	497	49	324	1,584
1990	347	11	1,164	1,477	1,691	230	994	5,914
1991	143	27	1,415	2,092	1,273	150	897	5,997
1992	169	15	2,554	2,640	1,323	155	809	7,665
1993	576	19	2,341	2,582	798	261	643	7,220
1994	344	32	2,243	1,892	756	131	840	6,238
1995	308	38	3,091	2,238	742	277	976	7,670
1996	294	18	2,151	1,434	865	286	594	5,642
1997	301	21	1,918	1,305	824	297	699	5,363
1998	291	30	2,566	990	597	330	563	5,387
1999	291	36	3,040	1,092	630	251	1,062	6,402
2000	420	25	3,905	931	431	181	376	6,269
2001	403	20	4,150	459	514	235	256	6,037
2002	428	24	3,136	560	546	104	459	5,257
TOTAL	**4,350**	**317**	**33,994**	**20,050**	**11,487**	**2,937**	**9,510**	**82,645**

Program Expenditures

The total costs of operating the Lighting Design Lab since 1987 have been $8,786,811. This includes all 1989-1997 BPA funds (37%), 1998-2002 NEEA funds (31%), 1989-1998 and 2001-2002 Puget Sound Energy contributions (2%), plus *LDL* service fees received during 2001-2002 (1%). After these regional reimbursements, net Seattle City Light costs during 1987-2002 were 30%. The 2000 Puget Sound Energy contribution plus 1989-2000 contributions from other agencies and organizations, amounting to $1,052,704 (13.3%), were deposited directly with the Seattle City Treasurer. With this offset against the Seattle City Light portion of *LDL* operating expenses, the City of Seattle overall net contribution drops to 18% of operating costs. (7)

Before receipt of reimbursement funds from BPA and NEEA, Seattle City Light expended $7,967,418 for *LDL* operations during 1987-2002. Start-up costs in 1987-1989 were $726,873, while ongoing operations from 1990 through 1997 averaged $523,929 per year. Average operating costs during 1998-2002 have risen to $771,702, with increasing levels of service.

Through 2000, about half of NEEA support was invoiced and received directly by Seattle City Light, the other half being supplied in the form of contract services. In 2001-2002 all NEEA support was channeled directly to the utility. Support received from NEEA support during 1998-2002 averaged $541,028 annually, about 49% higher than the prior BPA average of $363,100 per

LIGHTING DESIGN LAB PROGRAM

year during 1989-1997. This higher level of support reflects increased services that the *LDL* is now supplying to the region via expanded staffing, travel, outreach activities and seminars.

SEATTLE CITY LIGHT PROGRAM EXPENDITURES FOR THE LIGHTING DESIGN LAB PROGRAM (5)

Year	*Expenditures*
1987	$ 68,217
1988	55,257
1989	603,399
1990	409,008
1991	491,943
1992	464,397
1993	599,282
1994	498,677
1995	544,825
1996	525,155
1997	578,142
1998	431,164
1999	470,439
2000	455,502
2001	845,921
2002	896,090
TOTAL	**$7,937,418**

BPA FUNDING/REIMBURSEMENT TO SEATTLE CITY LIGHT FOR THE LIGHTING DESIGN LAB PROGRAM (6)

Year	*Funding*
1987	$ 0
1988	0
1989	503,158
1990	284,053
1991	325,182
1992	331,919
1993	436,990
1994	350,746
1995	369,507
1996	315,963
1997	350,458
1998-2002	0
TOTAL	**$3,267,976**

LIGHTING DESIGN LAB PROGRAM

CONTRIBUTIONS FROM OTHER AGENCIES FOR THE LIGHTING DESIGN LAB PROGRAM (7)

Year	*Operational Funds & Services*	*Indirect Donations*	*Total Contributions*
1987	$ 0	$ 0	$ 0
1988	0	0	0
1989	10,000	235,915	245,915
1990	10,000	119,839	129,839
1991	10,000	149,061	159,061
1992	10,000	78,246	88,246
1993	10,000	74,320	84,320
1994	10,000	51,770	61,770
1995	10,000	105,196	115,196
1996	10,000	(-98)	9,902
1997	10,000	72,280	82,280
1998	509,131	38,382	547,513
1999	627,313	34,338	661,650
2000	362,149	93,454	455,601
2001	560,993	47,291	608,284
2002	655,552	57,931	713,483
TOTAL	**$2,805,138**	**$1,157,925**	**$3,963,063**

Notes

1. Seattle City Light conducted two process evaluations of the *LDL*: *Evaluation of the Lighting Design Lab's Consultation Program* (December 1991) and *Evaluation of the Lighting Design Lab's Consultation and Mock-Up Services* (July 1994). The Northwest Energy Efficiency Alliance has sponsored four additional evaluations: *Start-up Process Evaluation Report: Lighting Design Lab* (April 1998), *Market Progress Evaluation Report–Lighting Design Lab* (April 1999), *Special Report: Organizational Structure Review and Recommendations–Lighting Design Lab* (June 2000), *Market Progress Evaluation Report–Lighting Design Lab* (September 2000), and *Market Progress Evaluation Report–Lighting Design Lab* (April 2003).

   A series of 1991-1993 reports assessed user satisfaction with *LDL* services. These reports include *User's Perceptions of Lighting Design Lab Services* (February 1991), *Lighting Design Lab Monthly Evaluation Report* (issued monthly from October through December 1991); *Lighting Design Lab Quarterly Status Report: First Quarter, 1992* (June 1992), *Lighting Design Lab Quarterly Status Report: Second Quarter, 1992* (July 1992), and *Lighting Design Lab 1992 Annual Status Report* (February 1993).

   Satisfaction with the Lab's services was at a high level in the 1991 survey and generally increased in the 1993 evaluation. Average ratings for consultations and mock-ups improved in the 1993 survey for six of seven items measuring satisfaction with the consultation services received. In both the 1991 and 1993 evaluations, high percentages of respondents expected to use the Lab for future lighting projects (92% and 91%, respectively).

LIGHTING DESIGN LAB PROGRAM

2. The 1994 process evaluation revealed by self-report that over three-quarters of both 1991 and 1993 *LDL* participants had installed or plan to install one or more of the energy efficient lighting recommendations resulting from their consultation or mock-up. A small subsample of survey participants reported a 49% decrease in the average estimated post-period lighting-related energy consumption in watts per square foot, declining from 2.59 to 1.32 watts per square foot. However, this estimate is derived from estimates of the *LDL's* Lighting Specialists or from client-supplied estimates. As a consequence, the comparison of pre and post electricity consumption presented in this report should be viewed only as an indication of the actual change in electricity use resulting from the consultations and mock-up services of the Lab.

3. The 1999 process evaluation found that the *LDL* is responsible for significant changes in market related behavior of users, including specifying and using more efficient lamps and ballasts, attention to lighting placement and wattage, and doing more analysis to determine the quantity and quality of illumination. Of users, 27% claim that their change in behavior is almost entirely due to the Lab, and 47% report that they have recommended the Lab to others. A third say that they have used technical data from the Lab to support a lighting decision, and about half of those who have changed their behavior or practice in response to their Lab experiences, say they will continue the behavior in the future. The changes in practice have influenced at least one building for 87% of users, and 20% report that their changes in their behavior have influenced 21 or more buildings.

   In 1999 an estimated 10-20% of architects, lighting designers, interior designers, building owners and managers, and electrical engineers in the *LDL* service area (Washington, Oregon, Idaho, and Montana) have used one or more Lab services. A primary reason why nonparticipants did not use the Lab was a lack of awareness (37%). Among those who were aware of the Lab but had not used the Lab, more that half said that distance was a major obstacle and another 21% said that it was too time consuming. Although the majority of Lab users use the Internet for work-related information, only 13% had visited the Lab's Northwest Lighting On-line site.

4. Participation data were acquired from visitor sign-in sheets and other LDL records on the number of tours, classes, consultations, and mock-up facility demonstrations given each month. Activity for all categories (except consultations and mock-ups) reflects the number of individuals participating, not the number of separate events. This difference in the unit of measurement for LDL program activities should be kept in mind in interpreting the total column for this table. Since 1991, class counts include participation on LDL on-site and off-site classes, as well as on-site classes held by other organizations. The LDL stopped recording walk-ins in 1994.

5. Financial information for 1987 and 1988 was obtained from Seattle City Light's Management Information System Cost Ledger reports for Work Order No. 70537 (-01).

   Seattle City Light and Bonneville Power Administration financial information for 1989-1999 was obtained from the Seattle Financial Management System and Summit System for Activity/Work Order No. 70537. Information on financial contributions from other participating utilities for 1989-1999 was obtained from the Lighting Design Lab's "Donation Summary" and "Income Log" reports. Contributions from other utilities and sponsoring groups do not appear in the SFMS. Seattle City Light financial information for 2000-2002 Summit System for Activity/Work Order No. 70537 (-01,-02,-03). Information on financial contributions from other participating utilities for 2000-2002 was obtained from the Lighting Design Lab's "Income Log" report.

LIGHTING DESIGN LAB PROGRAM

Administrative costs for 1993-2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours. In 1993 the A&G overhead charge for the *LDL* Program was $41 (assessed on shop crew labor). No A&G overhead was charged in 1994 and 1995.

6. From 1989 through 1997, the Bonneville Power Administration (BPA) was invoiced quarterly by Seattle City Light for funding to support the Lighting Design Lab. These monies were accounted as revenues to Seattle City Light's Lighting Design Lab Program. BPA direct funding ceased after 1997 when the Northwest Energy Efficiency Alliance (NEEA) assumed major funding support on behalf of the Pacific Northwest region. However, about 57% of NEEA's budget in 1998-1999 was supplied by the BPA.

7. The following table details sources for the Lighting Design Lab's 1987-2002 total operating costs.

Year	Net SCL Expended	BPA Funded	NEEA / Electric League	Puget Sound Energy	Funding from Other Sources	Total LDL Operating Costs
1987	$ 68,217					$ 68,217
1988	55,257					55,257
1989	(135,674)	503,158		10,000	235,915	613,399
1990	5,116	284,053		10,000	119,839	419,008
1991	17,700	325,182		10,000	149,061	501,943
1992	54,232	331,919		10,000	78,246	474,397
1993	87,972	436,990		10,000	74,320	609,282
1994	96,161	350,746		10,000	51,770	508,677
1995	70,122	369,507		10,000	105,196	554,825
1996	209,290	315,963		10,000	(98)	535,155
1997	155,404	350,458		10,000	72,280	588,142
1998	163,166		499,131	10,000	38,382	710,679
1999	153,048		627,313		34,338	814,698
2000	135,516		362,149	30,000	63,455	591,120
2001	237,638		560,993	20,000	27,291	845,921
2002	182,607		655,552	20,000	37,931	896,090
Total	$1,555,771	$3,267,976	$2,705,138	$170,000	$1,087,926	$8,786,811

Like BPA funding in past years, funds from the NEEA also offset Seattle City Light expenditures and are accounted as revenues to the program. These monies are reported here as operational funds, along with the value of operational services supplied by NEEA under contracts with the Northwest Energy Efficiency Council (NEEC, 1998-2002) and the Electric League (since September 1999).

From 1989 through 1998, Puget Sound Energy supplied $10,000 of annual support in the form of an holding or draw account; however, no funds of this kind were received in 1999. In 2000, Puget Sound Energy donated $30,000 to the *LDL,* and provided another $20,000 in each year 2001 and 2002. The total expenditures reported for 2000 through 2002 have been adjusted by these amounts. Total cash expenditures for the *LDL* were $485,502 in 2000, $845,921 in 2001, and $896,090 in 2002.

LIGHTING DESIGN LAB PROGRAM

Other utilities and agencies support the Lighting Design Lab by making donations directly to the City of Seattle, both monetary and of products. For example, in 2002 donations were made by BC Hydro ($5,000) and Snohomish Public Utility District ($10,000); funds were also received for class and use fees ($22,931). Apart from NEEA funding, donated monies in 1987-2000 were deposited by the City Treasurer in the general fund, and were not accounted as revenues to the *LDL* program. These donations did not contribute toward *LDL* operating expenses. In 2001-2002, funds and donations from these other sources became available to the Lighting Design Lab through a separate City Light expense account.

$MART BUSINESS PROGRAM

Description

The $mart Business Program began operating under this name in January 1999. It consolidates two prior program components: the $mart Business Lighting neighborhood program (1995-1998) and the Small Commercial Rebate citywide program (1997-1998). The consolidated program provides financial incentives to small-commercial customers for replacing inefficient lighting with approved energy efficient lighting. Rebates range from $30 to $70 per fixture.

The former *$mart Business Lighting Program* offered financial incentive contracts to small commercial buildings in selected neighborhoods for installing energy efficient lighting. These customers were on the "small general service" Rate Schedule 31. Through their participation they received an incentive equal to 80% of the total measure installation cost. Lighting eligible for installation under the program included T-8 luminaires with electronic ballasts, compact fluorescent luminaires, high pressure sodium fixtures, metal halide fixtures, and lighting controls.

In 1995-1998 the $mart Business Lighting Program offered the financial incentives to customers in areas targeted by the Neighborhood Power programs: Fremont in near-north Seattle (the 1995 pilot), the Georgetown / South Beacon Hill / Sodo Area south of downtown (1996-1997), and Lake City in northeast Seattle (1998). During the next three years, targeted services were provided in: Southeast Seattle / Rainier Beach (1999), West Seattle / Delridge / White Center (2000), downtown Belltown / Denny Regrade (2000), and the Central Area east of downtown (2001). The 2002 program served the Greenwood / Phinney Ridge neighborhood in northwest Seattle.

In the fall of 1997, Seattle City Light began offering a *Small Commercial Rebate Program* for customers who were outside the targeted $mart Business neighborhoods. In this program component, customers on Rate Schedule 31 were paid a rebate for replacing existing lamps or fixtures with efficient ones. Beginning in 1999, these citywide as well as neighborhood rebate services were offered through the combined $mart Business Program.

The media coverage of the West Coast energy crisis during 2001 increased interest in the $mart Business program, and new contractors were recruited to meet demand. Investigation of small business offerings of other utilities found that some are using the $mart Business model as the foundation of their efforts. During 2001 and 2002, program staff continued to accompany the Mayor and other City officials on neighborhood tours organized by the Department of

$MART BUSINESS PROGRAM

Neighborhoods, generating small commercial leads for $mart Business. Two pilot installations in 2001 were made of walk-in cooler fan controllers in order to assess the viability of including this measure in the program in future. It appears that this measure is best implemented at the time of equipment upgrade, as it presented difficulties when applied to older coolers that had not been optimized.

Eligible Population

Small commercial customers who are on Small General Service (SMC, SMS) rates, formerly Rate Schedule 31, are eligible for the program. In 1998 there were 28,717 "small general service accounts" in the City Light service area. (1)

Lifetime of Conservation Measures Installed

The lifetime of the measures ranges from 4 to 12 years, with the average lifetime being 11 years.

Electricity Savings

This section contains two tables. The first depicts projects contracted by City Light during the calendar year. This table shows the potential energy savings that will be realized when the projects are completed. The second table presents savings realized from projects completed during the calendar year.

Note that the energy savings (both MWh and aMW) reported in both tables reflect savings from current year participants as well as savings in that year from all prior participants for whom the measure lifetime has not yet expired. For a description of first-year savings from current year participants only, see the referenced footnotes. The line titled "electricity savings since start of program" sums savings across all the years from program inception through the current reporting year. This illustrative construct exceeds the actual savings experienced in any given calendar year.

Energy savings are presented for the 1,107 projects contracted in the 1995-2002 period. Based on an evaluation of the $mart Business Pilot Program, savings projected by engineering calculations were reduced by 3% for the projects. As of 2002 the savings expected from these contracted projects total 12,538 megawatt-hours (MWh).

$MART BUSINESS PROGRAM

Energy savings are estimated for 1,084 program participants having completed projects in 1995 through 2002. As with contracted projects, the projected savings were reduced by 3% for the projects. With this adjustment, the average savings per building for 1995 through 2002 projects were 11,246 kilowatt-hours (kWh).

In 2002 the energy savings from cumulative (1995-2002) completed projects were 12,191 megawatt-hours (MWh). The load reduction in 2002 due to this program was 1.392 average megawatts (aMW).

ELECTRICITY SAVINGS FOR THE SMART BUSINESS PROGRAMS
— Contracted Projects —

Year	*Contracted Project Type*	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (3)	*Avg. MW Load Reduction in Year*
Annual Customers by Service:							
1995	$mart Business	137	137	924,887	11,460	1,570	0.179
1996	$mart Business	25	162	225,401	19,042	2,046	0.234
1997	$mart Business	45	207	472,775	17,398	2,829	0.323
	Small Commercial	28	28	125,877	12,082	338	0.039
1998	$mart Business	40	247	287,379	15,194	3,437	0.392
	Small Commercial	96	124	569,629	11,427	1,435	0.164
1999	Neighborhood	65	312	436,677	10,338	4,109	0.469
	Citywide	141	265	683,928	11,355	3,036	0.347
2000	Neighborhood	41	353	127,695	9,024	4,479	0.511
	Citywide	108	373	388,126	11,306	4,257	0.486
2001	Neighborhood	104	457	238,361	7,394	5,248	0.599
	Citywide	125	498	615,524	12,528	5,823	0.665
2002	Neighborhood	70	527	208,750	7,586	5,779	0.660
	Citywide	82	580	491,991	11,415	6,759	0.772
Total Program:							
1995	All Types	137	137	924,887	—	1,570	0.179
1996	All Types	25	162	225,401	—	2,046	0.234
1997	All Types	73	235	598,652	—	3,167	0.362
1998	All Types	136	371	857,008	—	4,872	0.556
1999	All Types	206	577	1,120,605	—	7,145	0.816
2000	All Types	149	726	515,821	—	8,736	0.997
2001	All Types	229	955	853,885	—	11,071	1.264
2002	All Types	152	1,107	700,741	—	12,538	1.431
Potential Electricity Savings Since Start of Program:						**51,146**	**MWh**

$MART BUSINESS PROGRAM

ELECTRICITY SAVINGS FOR THE SMART BUSINESS PROGRAMS
— Completed Projects —

Year	*Completed Project Type*	*Projects by Year* (2)	*Cumula-tive Projects*	*Sq. Ft. of Buildings*	*kWh Savings per Project*	*MWh Savings in Year* (4)	*Avg. MW Load Reduction in Year*
Annual Customers by Service:							
1995	$mart Business	137	137	924,887	11,460	1,570	0.179
1996	$mart Business	0	137	—	0	1,570	0.179
1997	$mart Business	48	185	431,634	16,350	2,355	0.269
	Small Commercial	28	28	125,877	12,082	338	0.039
1998	$mart Business	46	231	165,022	17,534	3,161	0.361
	Small Commercial	85	113	477,929	9,542	1,149	0.131
1999	Neighborhood	40	271	102,401	8,500	3,501	0.400
	Citywide	149	262	756,128	12,456	3,005	0.343
2000	Neighborhood	58	329	344,713	10,759	4,125	0.471
	Citywide	102	364	361,336	10,559	4,082	0.466
2001	Neighborhood	103	432	315,283	7,379	4,885	0.558
	Citywide	109	473	466,528	13,890	5,596	0.639
2002	Neighborhood	73	505	231,086	7,521	5,434	0.620
	Citywide	106	579	351,269	10,943	6,756	0.771
Total Program:							
1995	All Types	137	137	924,887	—	1,570	0.179
1996	All Types	0	137	—	—	1,570	0.179
1997	All Types	76	213	557,511	—	2,693	0.307
1998	All Types	131	344	642,951	—	4,311	0.492
1999	All Types	189	533	858,529	—	6,507	0.743
2000	All Types	160	693	706,079	—	8,208	0.937
2001	All Types	212	905	781,811	—	10,482	1.197
2002	All Types	179	1,084	582,355	—	12,191	1.392
Electricity Savings Since Start of Program:						**47,531**	**MWh**

Program Expenditure

Administrative expenditures and participant payments for completed projects totaled $4,132,185 from 1995 through 2002. In 2002 these program costs were $572,360. This represents the cost to the utility, and not the total resource cost. There has been no Bonneville Power Administration funding or involvement in the Smart Business Rebate Program.

$MART BUSINESS PROGRAM

PROGRAM EXPENDITURES FOR THE SMART BUSINESS PROGRAMS (5)

Year	Project Type	Admini-stration	Incentive Payments to Participants			Total Expenditures
			Contracted Projects (6)	All Payments for Projects Completed in Year (6)	Actual Expenditures in Year	
1995	$mart Business	$ 138,664	$ 340,357	$ 340,357	$ 340,357	$ 479,021
1996	$mart Business	170,882	99,939	0	20,225	191,107
1997	$mart Business	179,334	157,631	165,837	218,930	398,264
	Small Commercial	28,710	74,405	74,405	74,405	103,115
	Annual Total	208,044	232,036	240,242	293,335	501,379
1998	$mart Business	135,518	104,330	162,281	162,281	297,799
	Small Commercial	87,821	216,790	174,680	190,120	277,941
	Annual Total	223,339	321,120	336,961	352,401	575,740
1999	Annual Total	250,155	401,238	406,940	415,699	665,854
2000	Annual Total	231,515	218,724	287,570	284,600	516,114
2001	Annual Total	244,887	392,580	383,634	385,723	630,610
2002	Annual Total	251,880	281,455	330,141	320,479	572,360
TOTAL PROGRAM		**$1,719,366**	**$2,287,449**	**$2,325,845**	**$2,412,819**	**$4,132,185**

Notes

1. The eligible population figures are from the Electric Sales database, maintained by the Rates Section in Seattle City Light's Finance Division.

2. Data on the number of 1995-1998 contract-executed and completed projects were obtained from $mart Business Lighting records maintained by the Contracts Unit, Energy Management Services Division. Data on the number of 1998-2002 rebate-executed and completed projects were obtained from the Conservation Tracking System database maintained by the Community Conservation Section.

3. The total MWh savings reported by year reflect savings for the current year participants plus savings in that year from all prior participants.

4. First year energy savings from total participants in the Smart Business Program completing work in each year were: 1,570 MWh (1995); 0 MWh (1996); 1,123 MWh (1997); 1,618 MWh (1998); 2,197 MWh (1999); 1,702 MWh (2000); 2,274 MWh (2001); and 1,708 MWh (2002).

5. For the Smart Business Programs, administrative costs were obtained from Seattle Financial Management System and Summit System for Activity/Work Order Nos. 70502 ($mart Business Lighting—in Neighborhood Power areas) and 70586 (Small Commercial Rebates—Citywide and in Neighborhood Power areas).

$MART BUSINESS PROGRAM

Administrative costs for 1993-2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours.

Information in the Evaluation Unit database on annual incentive payments to participants was obtained from files maintained by the Contracts Unit and the Community Conservation Section, Energy Management Services Division. Actual incentive payments in the year were confirmed by Seattle Financial Management System reports.

6. Incentive payments for contracted projects represent the projected cost of payments for participating projects under contract or rebate agreement with Seattle City Light. The costs identified as "all payments for projects completed in year" represent all customer incentives for projects completing installation during the year. The amounts of these incentive payments to customers were obtained from the database maintained by the Evaluation Unit. The "actual expenditures in year" represent monies spent in the calendar year for projects receiving incentives during the year. Total expenditures are reported here as the sum of administrative costs plus actual incentive payments in the year.

   Incentive payments reflect the total cost of measure installation excluding costs incurred by the customer in excess of program allowances. The customer pays total installed costs directly to the contractor. Presented below are estimates of the annual total customer installed costs in nominal dollars by customers as contracted from 1995-2002:

Year	Annual Installed Cost	Cumulative Installed Cost
1995	$85,090	$85,090
1996	5,060	90,150
1997	73,300	163,450
1998	352,700	516,150
1999	335,681	851,831
2000	213,744	1,065,575
2001	290,558	1,356,133
2002	279,660	1,635,793

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

Description

The Energy Code Program (*ECP*) provides funding for inspection-based enforcement of the Seattle Energy Code. The city energy code provides savings equivalent to the savings that would be produced if the regional Model Conservation Standards (MCS) were in place in Seattle. The Energy Code Program was preceded by the Early Adopter Program (*EAP*, November 1986 to March 1989), also funded by the Bonneville Power Administration.

The Sustainable Design Programs are comprised of two related initiatives, the LEED Incentive Program and the Built Green Incentive Programs. Leadership in Energy and Environmental Design (LEED™) is a national rating and certification program organized by the U.S. Green Building Council for the siting, design, construction, and operation of new and renovated buildings. The four categories for LEED certification include platinum (highest), gold, silver, and LEED-rated. The LEED Silver Certificate, sought for Seattle municipal projects, requires specified levels of energy, water, and waste water efficiency, building commissioning, air quality, and daylighting and design excellence. Seattle's Built Green Incentive Program offers incentives to implement the Built Green™ program of the Master Builders Association of King and Snohomish Counties. The City Light Built Green Incentive Program serves private sector construction of new multifamily building projects that incorporate sustainable, "green" materials and methods early in the design process.

Seattle Energy Code Enforcement: Under the Energy Code Program, energy-related inspections are performed for commercial buildings receiving permits applied for after October 1986 and issued beginning April 1989. Final inspections were also provided for projects started under the Early Adopter Program. The affected end-use technologies include the efficiency of building envelopes, water heating, HVAC (heating, ventilating, and air conditioning) systems, lighting, and motors. In the past, the Energy Code Program provided payments for staff training, technical assistance, implementation and enforcement, which were passed from the BPA through local utilities to local building agencies. With the cessation of BPA funding, Seattle City Light now independently funds the Seattle Department of Design, Construction and Land Use (DCLU) for permit review, inspections, and consultation with prospective developers.

Before 1992, commercial buildings using prescriptive compliance methods were considered "simple," while the typically larger buildings (over 4,000 square feet) using component performance compliance methods were considered "complex." Major projects (commercial buildings over 50,000 square feet) were classified by compliance method as either as "major

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

projects requirement" or "MPR prescriptive path." For a description of this aspect of the Seattle Energy Code, see the *Energy Code Major Projects Requirement,* in SECTION IV: DISCONTINUED COMMERCIAL–INDUSTRIAL PROGRAMS.

City Light's Energy Code Program also applies to any electric resistance heat home receiving a building permit within the State of Washington beginning July 1991. Through June 1995, these permitted buildings having 2,000 square feet or less were eligible for a builder/consumer incentive payment, to offset the additional costs of installing conservation measures now required by state law. The incentive payment was $900 per single-family or duplex dwelling, and $390 per unit for multifamily dwellings (having three or more units). The purpose of the residential builder/consumer payment was to assist builders for a period of time with the additional cost of meeting code requirements, until costs of newer-technology measures came down and the market was transformed. Residential incentive payments ceased in 1996, at which time builders and developers became responsible for meeting the code without financial assistance. In 1992 the Bonneville Power Administration paid 75% of the incentive amount; the proportion increased to 100% from 1993 through 1996 (when BPA funding ceased).

LEED™ Incentives: Through the Sustainable Design Programs, City Light staff have been actively involved in the design of several municipal buildings, including the central Public Library, Seattle Justice Center and Civic Center, McCaw Performance Hall, and Key Tower. All of these projects will eventually receive City Light financial incentives for many of the installed energy conservation measures, for designs that meet the LEED Silver Certificate efficiency rating.

Sustainable building practices are just now becoming appealing to 'early adopters' among architects, engineers, product manufacturers, and public institutions. For the majority in the development community, however, these are not yet standard practice in Seattle and the Pacific Northwest. This is due to a variety of barriers such as perceived increased cost, lack of consumer demand, and lack of technical information.

Efforts to encourage sustainable building began with the Seattle Sustainable Building Action Plan, which was developed in 1997. This was followed by a series of three grants funded by the U.S. Department of Energy through Public Technology, Inc., and the Urban Consortium Energy Task Force. The first grant, for the Northwest Regional Sustainable Building Action Plan, was conducted by City Light in 1998 with the participation of over 200 development industry professionals from the Pacific Northwest states and British Columbia. Large parts of the Northwest Plan have been incorporated into the work plan of the U.S. Green Building Council, Cascadia Chapter. Through the second grant, Project Greenbuilt, in 1999 City Light worked with the cities of Issaquah, Bellingham and Seattle to help incorporate sustainable design into a fire station, a public works center, and the new City of Seattle Justice Center (a project registered

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

with the U.S. Green Building Council's LEED scoring system). The third grant is the Sustainable Demand Project. (See the *Commercial–Industrial Highlights* in SECTION I: SUMMARY OF ACCOMPLISHMENTS AND EXPENDITURES.)

The initial sustainability efforts resulted in formation of the City of Seattle's multi-departmental Green Building Team. With adoption of the City's Sustainable Building Policy, the LEED Silver level was adopted as the desired standard for all new City-owned building projects, new or remodel, of over 5,000 square feet. By mid-2001 twelve City projects were registered with LEED™. City Light staff members continue to actively participate in the Green Building Team.

One of the lessons learned by the High Performance Building Team was that intervention with a team of City staff could be somewhat intimidating and did not necessarily create the intended atmosphere of collaboration. Further, some of the costs associated with LEED certification, particularly the costs of registering and documenting a project and the costs of energy modeling, still stood as significant barriers. In 2001, City Light and Seattle Public Utilities co-sponsored a new incentive program to overcome those problems, the LEED Incentive Program.

With $50,000 from City Light and $30,000 from Seattle Public Utilities, the LEED Incentive was offered in 2001-2002 as a pilot and an interim solution to encourage projects to pursue LEED certification. Responses to Council Resolution 30280 suggest a number of financial and non-financial incentives could motivate projects to pursue LEED certification. The LEED Incentive pays $15,000 for projects which commit to achieving the LEED-rated Certificate and $20,000 for the LEED Silver Certificate. The only requirement beyond committing to achieve one of these levels is that one early eco-charette be conducted with the entire owner and design team and with end users to identify sustainable building goals for the project. The City expects this strategy to provide a greater sense of project ownership. City staff act as resources to assist in the charette discussions. Incentive funds are paid up front, and are used for soft costs only—registration, documentation, energy modeling, and so forth—however the project chooses to use them. If projects fail to meet the certification level to which they are committed, the design funds must be returned to the City.

Built Green™ Incentives: The City of Seattle wants private sector construction projects to follow its lead by incorporating more sustainable, 'green' materials and methods. Funded by Seattle City Light and Seattle Public Utilities, the Built Green Incentive Program provides financial assistance to building owners and developers to incorporate meaningful and cost-effective sustainable building goals early in building programming and design decisions. The City participates as an active observer, to help develop other cost effective sustainable building services that the City can offer to the private sector.

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

To Built Green participants, the City of Seattle makes available, on an optional basis, technical assistance of the City's Green Building Team, the Lighting Design Lab, and the Resource Venture; facilitation assistance for up to two Building Design Charettes with Building Design Decision participants; and assistance in maximizing the value of City of Seattle incentives, including City Light's Built Smart Incentives and Public Utilities' Water Smart Technology Incentives and technical assistance.

Funding is limited; projects selected for funding are those that most aggressively comply with the criteria detailed in the Built Green Incentive pre-application form. Eligible are multifamily projects of five units or more that meet the criteria described in the Built Green™ Multifamily Checklist or Communities Checklist. The applicant must be a project owner or developer. Projects must be registered with the Built Green™ program of the Master Builders Association of King and Snohomish Counties.

Funding is provided based on achieving a minimum of 360 points on the Multifamily checklist. The incentive is calculated as $5,000 plus $50 per dwelling unit (up to 100 units) or $10,000 plus $10 per unit (over 100 units), to a maximum of $15,000. If the project should exceed 450 points, incentive levels rise to $6,000 plus $65 per dwelling unit (up to 100 units) or $12,500 plus $10 per unit (over 100 units), to a maximum of $20,000. All projects must achieve a minimum of 180 points combined in the Site & Water and Energy Efficiency sections of the checklist. Three-fourths of funding (based on the 360 point level) is paid when an Built Green agreement signed, and the balance paid on successful project certification. If a project fails to the meet minimum performance achievement of 360 points, applicants must reimburse Seattle City light for all incentive funding received.

Eligible Population

The Energy Code Program serves electrically-heated new construction commercial and industrial buildings, commercial remodels and additions, as well as new construction single-family and multifamily buildings with electric space heat.

The Sustainable Design Programs serve the design and development community for new construction and renovation of commercial and multifamily residential buildings.

Lifetime of Conservation Measures Installed: Varies by measure.

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

Electricity Savings

Estimates of commercial energy savings are not available for the Seattle Energy Code or Model Conservation Standards, as compared to previous building practice. Commercial permit-related activity counts are not available for 1998-1999. (1)

The average single-family home or duplex receiving a residential builder/consumer payment is estimated to save about 2,000 kilowatt-hours (kWh) per unit. These savings represent 10% of the typical electrically-heated single-family home's energy use (19,580 kWh in 1990). Multifamily buildings (with three or more units) receiving a builder/consumer payment are estimated to save 650 kWh per unit. These savings represent 8% of the typical electrically-heated multifamily unit's energy use (8,347 kWh in 1990). These estimates are based on a study conducted by the Washington State Energy Office in 1993. Energy savings are reported only for projects receiving builder/consumer incentive payments.

Estimates of energy savings are not yet available for the Sustainable Design Programs. In 2002 the energy savings from cumulative (1992-1996) residential Energy Code participants were 20,028 megawatt-hours. The load reduction in 2002 due to residential Energy Code participants was 0.268 average megawatts (aMW).

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

PARTICIPATION IN THE ENERGY CODE PROGRAM
— Completed Projects —

Year	*Building Type*	*Buildings by Year* (2)	*Residential Units by Year*	*kWh Savings per Project*	*MWh Savings in Year **	*Avg. MW Load Reduction in Year*
Commercial Permits:						
1989	EAP Final Inspections	155	—			
	ECP Inspections	174	—			
1990	EAP Final Inspections	106	—			
	ECP Inspections	408	—			
1991	EAP Final Inspections	75	—			
	ECP Inspections	299	—			
1992	EAP Final Inspections	13	—			
	ECP Inspections	81	—			
1993	ECP Inspections	35	—			
1994	ECP Inspections	36	—			
1995	ECP Inspections	22	—			
1996	ECP Inspections	20	—			
1997	ECP Inspections	77	—			
1998	ECP Inspections	0	—			
1999	ECP Inspections	0	—			
2000	ECP Inspections	0	—			
2001	ECP Inspections	0	—			
2002	ECP Inspections	0	—			
Total	Commercial Permits	1,501	—			
Residential Permits:						
1992	Single Family	3	3	2,000	6	0.001
1993	Single Family	16	16	2,000	38	0.004
	Multifamily	7	394	36,586	256	0.029
1994	Single Family	10	12	2,400	62	0.007
	Multifamily	29	1,485	33,285	1,221	0.139
1995	Single Family	46	58	2,522	178	0.020
	Multifamily	34	896	17,129	1,803	0.206
1996	Single Family	56	69	2,464	316	0.036
	Multifamily	19	358	12,247	2,036	0.232
1997	Single Family	0	0	0	316	0.036
	Multifamily	0	0	0	2,036	0.232
1998	Residential (combined)	0	0	0	2,352	0.268
1999	Residential	0	0	0	2,352	0.268
2000	Residential	0	0	0	2,352	0.268
2001	Residential	0	0	0	2,352	0.268
2002	Residential	0	0	0	2,352	0.268
Total	Residential Permits	220	3,291	—	—	—

(Cont'd.)

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

PARTICIPATION IN THE ENERGY CODE PROGRAM
— Completed Projects —

Year	*Building Type*	*Buildings by Year* (2)	*Residential Units by Year*	*kWh Savings per Project*	*MWh Savings in Year **	*Avg. MW Load Reduction in Year*
Total Energy Code Activity:						
1989	Annual Total	329	0	—	0	0.000
1990	Annual Total	514	0	—	0	0.000
1991	Annual Total	374	0	—	0	0.000
1992	Annual Total	97	3	—	6	0.001
1993	Annual Total	58	410	—	294	0.034
1994	Annual Total	75	1,497	—	1,283	0.147
1995	Annual Total	102	954	—	1,981	0.226
1996	Annual Total	95	427	—	2,352	0.269
1997	Annual Total	77	0	—	2,352	0.269
1998	Annual Total	0	0	—	2,352	0.269
1999	Annual Total	0	0	—	2,352	0.269
2000	Annual Total	0	0	—	2,352	0.269
2001	Annual Total	0	0	—	2,352	0.269
2002	Annual Total	0	0	—	2,352	0.269
Total	All Buildings	1,721	3,291	—	—	—
Electricity Savings Since Start of Program (Residential):					**20,028**	**MWh**

* Energy savings data not yet available for commercial building Energy Code projects.

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

PARTICIPATION IN THE SUSTAINABLE DESIGN PROGRAMS
— Completed Projects —

Year	*Building Type*	*Buildings by Year* (2)	*Residential Units by Year*	*kWh Savings per Project*	*MWh Savings in Year **	*Avg. MW Load Reduction in Year*
Annual Projects:						
2001	LEED Certified	1	—			
2002	LEED Certified	4	—			
	Built Green	1	—			
Total Sustainable Design Activity:						
2001	Annual Total	1	—			
2002	Annual Total	5	—			
Total	All Buildings	6	—			
Electricity Savings Since Start of Program					**—**	**MWh**

* Energy savings data not yet available for Sustainable Design projects.

Program Expenditures

Administrative expenditures for the Sustainable Design and Energy Code Programs were $428,083 in 2002. Program expenditures totaled $5,533,291 from 1991 through 2002. This represents the cost to the utility and not the total resource cost. Builder payments from the BPA for residential projects amounting to $1,359,915 were issued in 1992 through 1996. Net City Light expenditures for LEED and Built Green incentives amounted to $52,800 in 2001-2002, while Seattle Public Utilities paid another $30,000 in incentives.

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

PROGRAM EXPENDITURES FOR THE SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS
— Contracted Projects —

Year	*Building Type*	*Seattle City Light Administration* (3)	*Dept. of Const. & Land Use Administration* (3)	*Total Administration*	*Incentives* (4)	*Total Expenditures*
1989-1990	Annual Total	—	—	—	—	—
1991	Commercial	$6,213	$433,574	$439,787	$0	$439,787
	Residential	23,827	0	23,827	0	23,827
	Annual Total	30,040	433,574	463,614	0	463,614
1992	Commercial	10,959	193,788	204,747	0	204,747
	Residential	4,134	0	4,134	3,000	7,134
	Annual Total	15,093	193,788	208,881	3,000	211,881
1993	Commercial	15,280	213,907	229,187	0	229,187
	Residential	12,480	0	12,480	168,060	180,540
	Annual Total	27,760	213,907	241,667	168,060	409,727
1994	Commercial	12,458	263,332	275,790	0	275,790
	Residential	12,810	0	12,810	591,950	604,760
	Annual Total	25,268	263,332	288,600	591,950	880,550
1995	Commercial	4,765	281,551	286,316	0	286,316
	Residential	5,334	0	5,334	401,640	406,974
	Annual Total	10,099	281,551	291,650	401,640	693,290
1996	Commercial	6,885	292,270	299,155	0	299,155
	Residential	8,287	0	8,287	197,340	205,627
	Annual Total	15,172	292,270	307,442	197,340	504,782
1997	Commercial	7,470	286,544	294,014	0	294,014
	Residential	8,877	0	8,877	0	8,877
	Annual Total	16,347	286,544	302,891	0	302,891
1998	Commercial	28,943	279,654	308,597	0	308,597
	Residential	521	0	521	0	521
	Annual Total	29,464	279,654	309,119	0	309,119
1999	Commercial	4,267	315,042	319,309	0	319,309
	Residential	2,595	0	2,595	0	2,595
	Annual Total	6,862	315,042	321,903	0	321,903
2000	Annual Total	77,338	327,204	404,542	0	404,542
2001	Annual Total	210,628	339,461	550,089	15,000	565,089
2002	Annual Total	45,772	382,311	428,083	37,820	465,903
TOTAL PROGRAM		**$509,843**	**$3,608,638**	**$4,118,418**	**$1,414,810**	**$5,533,291**

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

BPA FUNDING FOR THE SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

Year	*Administration* (5)	*Incentives* (6)	*Total Funding*
1989	$106,162	$0	$106,162
1990	130,236	0	130,236
1991	137,559	0	137,559
1992	27,050	2,025	29,075
1993	196,149	68,280	264,429
1994	143,183	676,080	819,263
1995	151,357	375,660	527,017
1996	82,757	237,870	320,627
1997-2002	0	0	0
Total	**$974,453**	**$1,359,915**	**$2,334,368**

CONTRIBUTIONS FROM OTHER AGENCIES FOR THE SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS (7)

Year	*Administration*	*Measures*	*Total Contributions*
2001	$ 0	$ 0	$ 0
2002	0	30,000	30,000
TOTAL	**$0**	**$30,000**	**$30,000**

Notes

1. The energy savings from commercial buildings affected by the *SEC* and *MCS* have not been quantified by Seattle City Light. These savings will be estimated in a future issue of the *Energy Conservation Accomplishments* report. Residential energy savings are estimated based on a code compliance study conducted by the Washington State Energy Office (*Getting to Code*, July 1993). Participation is reported separately for single-family (1-2 units) and multifamily (3+ units) buildings receiving residential builder/consumer payments in 1992-1996.

2. During 1992, three residential buildings received builder/consumer payments. Data on participation include all commercial inspections approved by City Light from second quarter 1989 through fourth quarter 1992. Commercial participation data for third quarter 1989 are not available. Commercial new building participants for 1993 and 1994 include the total number of commercial new building permits receiving final inspections in 1993-1994 (from "Monthly Permits Issued and Finaled" reports, Technical Code Unit, Code Development and Community Relations Division, DCLU). No 1993 data are available on the number of remodeled commercial buildings or those receiving additions.

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

	Commercial Permit Activity	New Simple	New Complex	Remodels/ Additions	Total Commercial
1989	ECP Energy Inspections	4	2	168	174
	EAP Final Inspections	14	8	133	155
	Annual Total	18	10	301	329
1990	ECP Energy Inspections	24	3	381	408
	EAP Final Inspections	18	10	78	106
	Annual Total	42	13	459	514
1991	ECP Energy Inspections	19	28	252	299
	EAP Final Inspections	3	0	72	75
	Annual Total	22	28	324	374
1992	ECP Energy Inspections	35	0	46	81
	EAP Final Inspections	2	0	11	13
	Annual Total	37	0	57	94

Total commercial *ECP* energy inspections numbered 35 in 1993, 36 in 1994, and 22 in 1995. There were no *ECP* inspections performed in 1996-2002 commercial building permits reported for this period reflect ongoing activities. Code development, staff training, and technical assistance activities continued in 1996-2002.

LEED-certified and Built Green buildings completions are documented by program records and payments made under Purchase Orders 6007 and 8755.

3. Administrative costs include monitoring of building permits, staff training, inspections, and technical assistance provided by the Department of Design, Construction and Land Use; plus Seattle City Light administrative expenses. Cost ledger data detailing program expenditures during 1989 and 1990 are not available. Therefore the total cost of the *ECP* is under-represented by this table.

   Cost data for 1991-2002 are from the Seattle Financial Management and Summit Systems for Activity/ Work Order Nos. 70597, 70535 and 70546. These figures do not reflect BPA funding.

   Administrative costs for 1993-2002 include an A&G overhead charge (begun in April 1993) for utility administrative and general expenses. This charge distributes departmental administrative and general expenses, including nonprogrammatic labor and expenses, to individual conservation programs in proportion to programmatic labor hours.

   In 1993 the A&G overhead charge for the *ECP* was $7,478, or 27% of total Seattle City Light programmatic administrative expenditures. By program component, the A&G charges were: Residential, $3,381 (27%); and Commercial/ Industrial, $4,097 (27%). In 1994 the total A&G overhead charge was $4,829 (19%), which by program component was: Residential, $2,153 (17%); and Commercial–Industrial, $2,675 (21%). In 1995 the total A&G overhead charge was $3,704 (37%), which by program component was: Residential, $3,671 (69%); and Commercial–Industrial, $33 (1%).

4. Incentive costs are for *ECP* residential builder/consumer payment transactions. Originally these monies were accrued in the year when permits were issued; the current report table has been adjusted to reflect the year (1991-1996) in which builders/consumers received payments. Residential projects may take up to two years to move from permit to completion of construction. Annual accruals in 1991-1993 were: $268,362 (1991); $335,580 (1992); and $290,220 (1993). Annual encumbrances were established in 1994-1995

SUSTAINABLE DESIGN & ENERGY CODE PROGRAMS

amounting to: $551,130 (1994); and $525,870 (1995). Of these total project set-asides, 69% resulted in residential building completions and final *ECP* inspections by the 1996 deadline.

5. BPA funding for the EAP during 1987-1988 totaled about $427,520. The administration total for April 1989 through December 1990 is derived from *ECP* quarterly financial status reports (269A) to the BPA. Funding through 1997 for *ECP* administrative activity totals $974,453. The BPA provided partial funding for *ECP* enforcement of the Seattle Energy Code, at the rate of $900 per single-family or duplex unit, and $390 per multifamily unit (in triplex or larger buildings). Residential totals for 1992-1996 are derived from transaction reports and Contracts Unit files of monthly invoices to the BPA under the Residential Conservation Agreement, Washington State Options, Builder Payments (Schedule E).

6. The BPA funded builder/consumer incentive payments at a 75% cost share in 1992. The reimbursement level rose to 100% in 1993. A total of 1,001,002 square feet of conditioned commercial space was approved as meeting the Energy Code in 1994. Qualifying commercial square footages are not currently available for other program years.

7. The following table details sources for the Sustainable Design Program's 2001-2002 total incentive costs. In 2002, Seattle City Light paid $67,820 in participant incentives and invoiced Seattle Public Utilities for $30,000 of shared incentive costs.

Year	Net SCL Expended	SPU Invoiced	Total Paid Sustainable Design Incentives
2001	$ 15,000	$0	$ 15,000
2002	37,820	30,000	67,820
Total	$ 52,820	$ 30,000	$ 82,820